DOCUMENT RESUME

ED 105 177 CE 003 458

AUTHOR	Huberman, A. M.
TITLE	Some Models of Adult Learning and Adult Change. Studies on Permanent Education, No. 22/1974.
INSTITUTION	Council of Europe, Strasbourg (France). Committee for Out-of-School Education and Cultural Development.
PUB DATE	Jan 74
NOTE	81p.
AVAILABLE FROM	Council of Europe, Strasbourg, France ($2.00)
EDRS PRICE	MF-$0.76 HC Not Available from EDRS. PLUS POSTAGE
DESCRIPTORS	Adoption (Ideas); *Adult Development; *Adult Education; *Adult Learning; Adult Students; Career Opportunities; Changing Attitudes; *Continuous Learning; *Developmental Psychology; Educational Objectives; Evaluation; Teaching Methods

ABSTRACT

With emphasis on the developmental psychology unique to adults, the author presents a comprehensive document of research and progress pertaining to adult learning and change. Section 1 reviews age cycles of adulthood as well as changing career patterns for men and women. Also examined are changes with age in leisure and interest patterns, anxieties, interpersonal relations, sense of time, with special importance attached to recent research on biophysical maturation in adults. Of significance in intelligence testing is the vast range of ability at each age level. Adult losses maturational decline are compensated by experience, knowledge, and wisdom. Section 4 deals with research distinguishing continuing education participants from nonparticipants and points to strength of motivation as the key variable. Three constant factors of adult programs found across nations were that participants tend to be younger, more educated, and hold more professional jobs than the national mean. Other document sections pertain to institutional role, traditional practices, and evaluation methods of continuing education. Section 6 focuses on adult reaction to change and the tendency for an increasing level of determinism. Two programs of change described are training in achievement motivation by D. McClelland and the cultural literacy programs of P. Freire. (EA)

ED105177

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PERMANENT EDUCATION

SOME MODELS OF ADULT LEARNING AND ADULT CHANGE

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STUDIES ON PERMANENT EDUCATION

No. 22/1974

SOME MODELS OF ADULT LEARNING AND ADULT CHANGE

by

A M HUBERMAN

Professor and Chairman,
Department of Education,
Ecole de Psychologie et
des Sciences de l'Education,
Université de Genève

DECS 3/DECS 6

STRASBOURG, JANUARY 1974

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I N T R O D U C T I O N

It is only in the very recent past that we have come to study adults and adulthood as a developmental period in itself - a period during which biological maturation, accumulated experience and formative learning serve to shape an age group which is qualitatively distinct from childhood, adolescence or extreme old age. Adults have more experiences than children, they have different kinds of experiences; and adult experiences take place in different settings from those of children. They use different means for exploring, testing and constructing reality. At the same time, adults change through the years in their sense of time, their career pattern, their physiological condition and their complex of interests and motivations.

The implications for education are obvious. We might best summarise them by advising adult educators to spend as much time studying the rhythm of mental, physical and emotional development of their students as do child psychologists and pedagogues in the primary school. An adult psychology is as necessary for continuing education as is an adolescent psychology for education at the secondary level.

This has hardly been the case to date. Most continuing education is still based on the objectives and methods used in secondary schools, in the military service or in the university with little adaptation to the particularities of the clientele. Most of what we have learned about how adults - as opposed to children and adolescents - go about learning has not been utilised in existing programmes. The result, as has been noted frequently, is the creation of separate educational systems for children and adults or the careless identification of one with the other. The consequences are often that the child is not encouraged to continue his training as an adult and the adult finds it difficult to tie in the new training with what he has received in his childhood. This makes impossible the "vertical integration" of education with which we are so preoccupied at present.

1. ADULTHOOD AS A DEVELOPMENTAL PERIOD IN THE LIFE CYCLE

1.1. Major concerns during the life cycle: a social psychological framework

Having lived longer and having a greater apperceptive mass of past experiences, adults are not only much more complex than children, but they are more different from one another and increasingly different as they move from youth to extreme old age (1). To use topological language, they are more differentiated and less dependent on immediate influences of the environment. At the same time, however, the cycle of biological maturation, personal aspirations and social roles (eg as parent, employee and citizen) is relatively stable in advanced industrial economies. This means that we should be able to predict the principal events and preoccupations of each major period in a person's life. At the most general or molar level, adults pass through 5 "age cycles" during which, at a given point of physical and mental maturation, they expect themselves and are expected by others to behave in a certain manner. Havighurst (2) calls these "periods of dominant concerns". After the period of childhood (0 - 10 years, during which the child comes to differentiate himself from his environment) and early adolescence (10 - 18 years, when a young person achieves self-identity and biological maturity), we have the following cycle of adult concerns:

- Focusing one's life: age 18 - 30 - Having achieved a relatively stable psychological identity, the young adult seeks a social identity through the selection of a job, the choice of a marriage partner, residence in a community and the forming of an internally consistent ideology. Havighurst points out that this period is characterised by a maximum concern with one's self-image and with one's immediate, personal life - in particular, with one's work. Such social activities as voting and participation in community affairs are less frequent than during middle age.

Collecting one's energies: age 30 - 40 - Psychologists describe this period as fairly stable. There is growth in skill and experience, as evidenced by promotions and a high level of productiveness. Child rearing is a major preoccupation and is carried out with greater ease and pleasure than would be the case earlier or later in life. The individual is at or near the height of his earning power in many occupations. There is a general "ego stability", relatively little introspection, and a good deal of active mental and physical energy available. Most participation in education is instrumental (ie vocational or professional courses predominate), but there is a heightened interest as well in group activities and in expressive forms of education (foreign languages, aesthetic appreciation, creative art and music).

- Exerting and assuring oneself: age 40 - 50 - The healthy adult is now presumably at the height of his life cycle. The male is able to exert a maximum amount of energy in his work; a woman is no longer

tied down to her children and is therefore able to spend more time on herself. Investment of activity is greatest in the outer world of work, social affairs and politics. There are tangible rewards in home and family life as children begin to make their own accomplishments. Adult educators note a more active interest in civic affairs and in cultural subjects among this age group. In vocational courses, a new development is the presence of large numbers of women undertaking new careers and, more revealing still, a growing number of men attempting a total shift in their career to another vocation. Here, of course, we see the disadvantages of an educational system which has forced young people into binding educational and vocational decisions before they were ready to make them and, by making the change of profession dependent on diplomas and certificates measured by length of study, has made it impossible for adults to change professions unless they are financially secure.

Although a generally expansive period in the life cycle, we should note that physical changes begin to take place: menopause, heart and circulation maladies, less attractive physical appearance.

- Maintaining one's position and changing roles: age 50 - 60 - This period is characterised by a decline of physical strength, skill, attractiveness and of libidinal desire. Promotions are harder to gain at work. This is a period of "plateau" in terms of social influence and economic productiveness; one must exert oneself in order to avoid losing ground in one's career. Psychologically, clinical tests show that the world appears more complex and problematic to the adult at age 50 than at age 35. He has more doubts about his mastery of the environment; he is less energetic, less virile and more passive and deferent. He becomes more interested in short-term rewards, generally sensual and affiliative, rather than in long-range achievements, while at the same time is reluctant to give up the struggle with demands from the environment. In general, "ego concerns" turn inward: thought replaces action as the principal means of dealing with the world. This phenomenon turns up in the high enrolments in adult programmes of literature, philosophy and religion.

- Deciding whether and how to disengage: age 60 - 70 - This period is characterised by physical deterioration and decline in health, by retirement and death of friends and relatives, by a decreasing interaction between the individual and others in society. According to one school of thought, such a psychological "disengagement" is the maturational - and therefore biological - development of the individual, whereby the conscious self or ego shows an intrinsic desire to withdraw from social relations and emotional attachments, in combination with a quest for short-term gratifications (food, entertainment, physical pleasure). The type of continuing education most followed by this age group include less active, more contemplative and cultural programmes: international relations, cultural tourism, economic and political affairs, art and dramatics, music.

- Making the most of disengagement: age 70 - 80 - With one's life work finished for the most part and one's circle of relations and interactions with the outside world diminishing, the concerns of old age are generally those of reduced financial means, health, dependence on others. A number of gerontologists concentrate on the struggle in old age between despair and integrity or dejection and a sense of self-fulfilment. The healthy adult in old age can live in the present without relying heavily on the past, is self-accepting and content with the outcomes of his life, has an active programme of daily tasks, etc.

Elsewhere, Havighurst (3) has telescoped these "dominant concerns" into a list of what he calls "developmental tasks". In each age period, a problem or barrier arises which must be successfully overcome before an individual can go further towards a personal and social maturity. Failure in the task results in unhappiness, disapproval by society and difficulty with future tasks. For example, the tasks of early childhood include learning to walk, learning to talk, learning to take solid foods, learning to control elimination, learning sex differences and sexual modesty, forming simple concepts of social and physical activity. The developmental tasks of adulthood are the following:

Early adulthood (age 18 - 30):

- Selecting a mate.
- Learning to live with a marriage partner.
- Starting a family.
- Bringing up young children.
- Managing a home.
- Getting started in an occupation.
- Taking on civic responsibilities.
- Finding a congenial social group.

Middle age (age 35 - 60):

- Achieving adult civic and social responsibilities.
- Establishing and maintaining an economic standard of living.
- Assisting one's children to become adults.
- Developing durable leisure time activities.
- Relating to one's marriage partner as a person.
- Accepting and adjusting to physical changes.
- Adjusting to one's ageing parents.

Late maturity (age 65 -):

- Adjusting to decreasing physical strength and to death.
- Adjusting to retirement and to reduced income.
- Adjusting to death of one's marriage partner.
- Establishing an explicit affiliation with one's age group.
- Meeting social and civic obligations.
- Establishing satisfactory physical living arrangements (in light of physical infirmities).

This conceptual framework is useful as a rough instrument for measuring the interaction of physiological, psychological, social and economic changes as they transpire in the life of an individual. When we examine below the types of courses and numbers of enrolments in continuing education, we shall note a striking correlation between the types of courses followed and the principal

"tasks" outlined by Havighurst. Thus, enrolment in vocational courses is dominated by younger people and by women freed from early child-rearing. Programmes in international relations, community affairs, economics and cultural topics are followed by the middle aged. Those slightly older tend to enrol in reading circles, in religious and philosophical subjects, homemaking and gardening. Retired persons take up philosophical and cultural programmes and prefer instructional setting with small, congenial groups. Studies of these patterns in continuing education show consistency both between different age groups (cross-sectional) and in the course of the life of a given population of adults (longitudinal).

1.2. A psycho-sexual framework

Clinical psychologists have evolved another framework with which we may view the emotional development of an adult through the life cycle. Borrowing from psycho-analytic and anthropological studies, Erikson (4) has evolved a developmental theory comprising 8 stages of ego development from infancy to old age. Each stage is related to the increasing complexity of functions in the maturing organism. Similarly, each stage - like the "tasks" in Havighurst's model - involves a personal crisis, whose resolution determines the future development of the personality, as well as the individual's reactions to people and objects, his success in adapting to internal and external demands, and his perception and evaluation of himself.

The model can be laid out graphically:

	1	2	3	4	5	6	7	8
H maturity								ego integrity v. despair
G adulthood							generativity v. stagnation	
F young adulthood						intimacy v. isolation		
E puberty and adolescence					identity v. role confusion			
D latency				industry v. inferiority				
C locomotor-genital			initiative v. guilt					
B muscular-anal		autonomy v. shame, doubt						
A oral-sensory	basic trust v. mistrust							

Fig. 1. Model of ego growth and development from infancy to old age

We can see that the matrix is Freudian, with its accent on psycho-sexual development from the oral and anal to the genital stages, and in its emphasis on the first 5 years as the crucial period for personality development and growth. The model has been used in a number of clinical studies which have, in effect, shown that the healthy personality is preoccupied with the major "crisis" set out in Erikson's theory (intimacy v. isolation, generativity v. stagnation, ego-integrity v. despair) as he passes from young adulthood to old age. In contrast, the neurotic individual is usually "fixated" in an unresolved crisis dating from an earlier stage, most often from infancy.

For example, a successful resolution of the crisis of early adulthood refers to achieving mutuality with a partner of the opposite sex with whom one is able to regulate the cycles of work, procreation and recreation. The healthy personality develops strong, mutual emotional attachments, whereas the neurotic personality is isolated, avoids intimate contacts, is self-absorbed or indiscriminantly sociable. In middle adulthood, "generativity" involves the sense of having contributed to the future in one's work and in developing the capacities of one's children. The neurotic individual is seen as "vegetating", doing only routine tasks at home and at work, uninterested in applying his abilities to something new. Finally, in late adulthood, ego maturity implies a basic acceptance of one's life as having been inevitable, appropriate and meaningful, as against such traits as a strong fear of death, an emphasis on one's failures, and the placing of blame for one's errors on others or on external forces (5).

1.3. Career patterns

The final framework providing a global overview of changes during the human life span is the cycle of vocational careers. This cycle, to be sure, has changed markedly during the past 75 years. Entry into the labour force is delayed by 4-6 years and retirement comes 5-1 years earlier in most advanced industrialised countries. To look briefly at American data, we see that in 1890 a large proportion of boys at age 15 were already in the labour force - some 10% between 10 and 13 years of age! Similarly, 27% fewer men over age 65 were working in 1953, as compared with 1890. The work cycle has changed as well, with more women returning to work after age 30 in recent years (6):

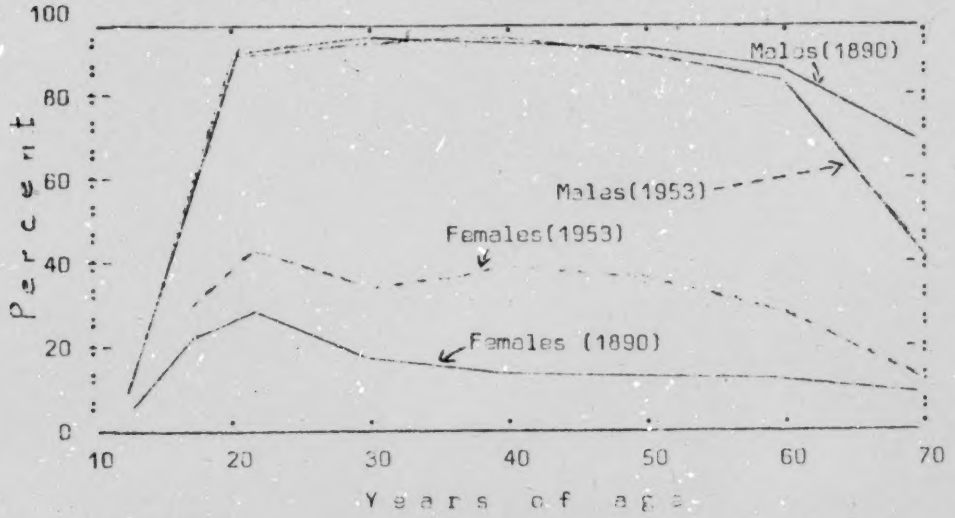
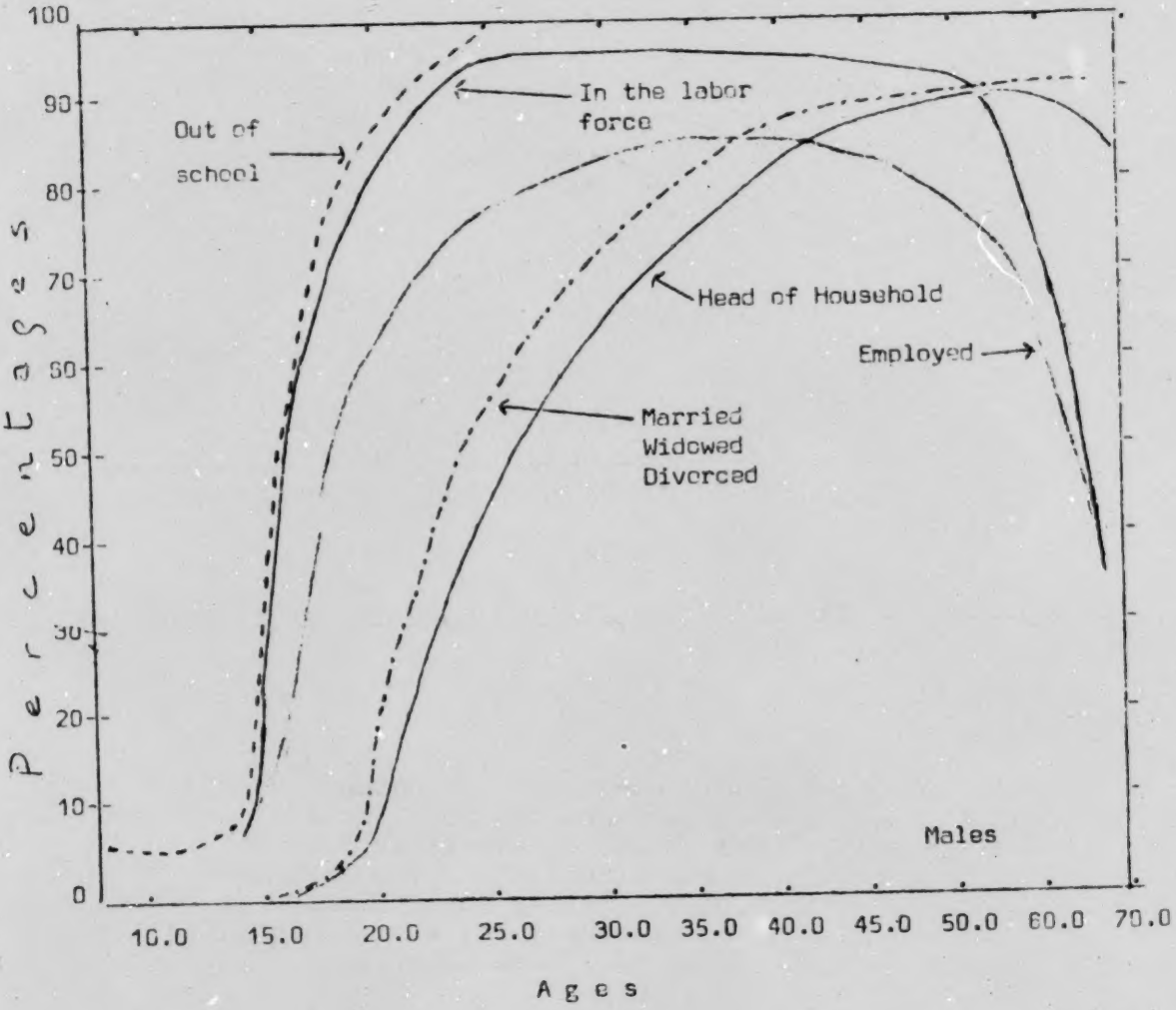


Fig. 2. Labor force in the U.S.A. as a percentage of total population of each age group, 1890 and 1953

To enable a closer study of the career cycle and, in particular, of the difference between sexes in career patterns, we can trace the pattern of activities, pressures and responsibilities of American men and women circa 1950 (7):



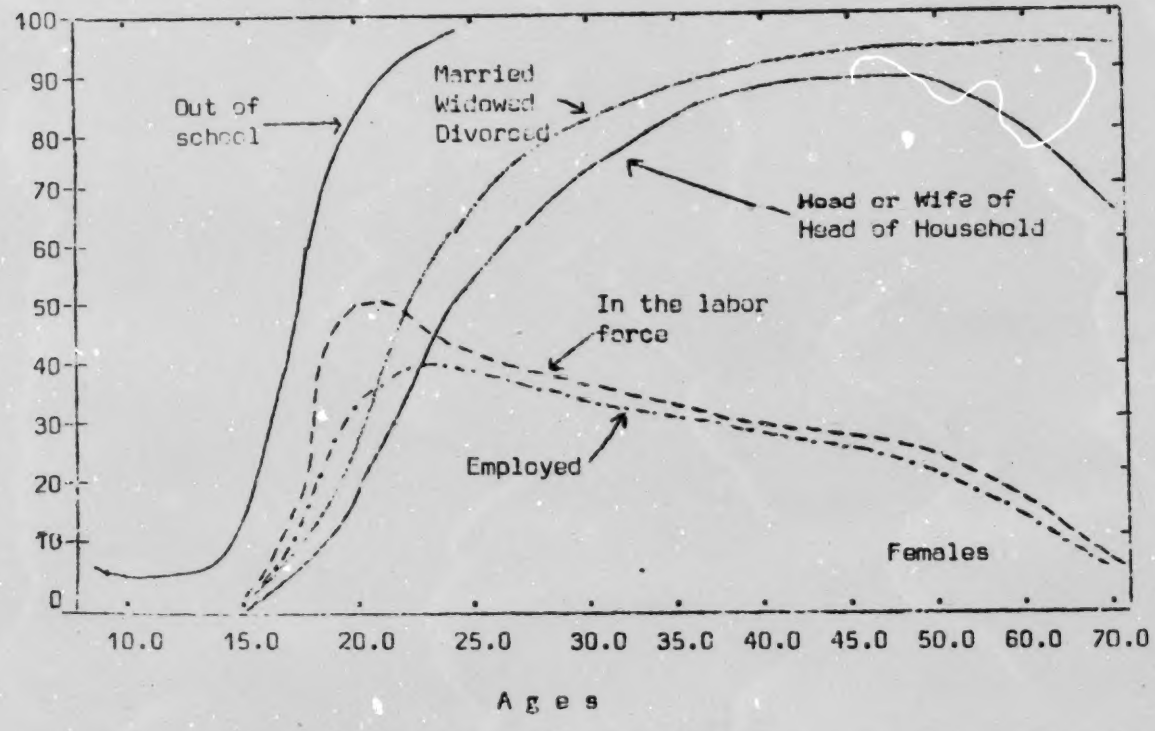


Fig. 3. Changes in major activities and roles of American men and women through the life span

The data is particularly useful in indicating (a) the critical ages at which a person's concern shifts from school to employment and to marriage and (b) the amount of available time which individuals have available for other activities than those demanded by work or family obligations. As this second factor is crucial for participation in continuing education, we can visualise the changes in leisure time during adulthood in graphic form (8):

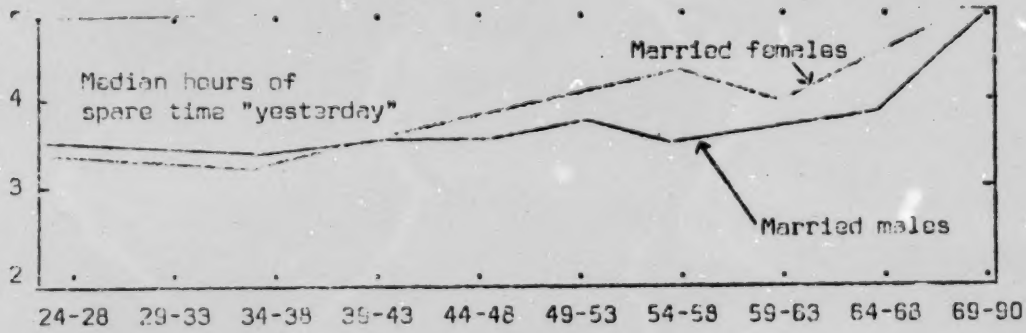


Fig. 4. Age changes in amount of leisure time for university graduates, 1950

For the average woman, time demands are presumably greatest when family size is at a peak, after and before which there is more time available for the kinds of leisure time pursuits we associate with continuing education. For men, major increments of free time are not likely to occur before retirement, aside from time gained through the reduction of working hours with increased rates of production. These data explain some of the participation trends noted earlier: high enrolments of middle-aged women, non-vocational programmes followed by women, more vocational courses followed by men, particularly at the start of their careers.

The career cycle is also a useful index in that an occupation situates the individual in a group, regulates his life activities, sets his position in society and constitutes one of the main sources of satisfaction. Friedman (9) has set out a simplified framework for plotting the stages of the work career for both men and women. Here again, as individuals pass from one stage to the next, their positions, ambitions, value orientations and sense of time all undergo changes. The four stages for working men are the following:

1) Entry (approximate age: 18-28) - This is a period in which the individual - or the employer - decides whether he will commit himself to the career or reject it. The "time orientation" is toward the future, with the conviction that (a) the future will be better than the present and (b) that change in attitudes, skills and ways of organising one's life is desirable for improving one's chances.

2) Career development (approximate age: 25-50) - This is the period spent in devoting one's energies to learning the techniques for promotion or advancement by mastering technical skills and/or the skills of dealing with people in the work situation. Time and value orientations are similar to the previous stage.

3) Plateau (approximate age: 35-55) - The individual realises that he has advanced as far in his present occupation as is possible. He resolves this problem by reorienting his scale of expectations or else by looking for new employment. The shift in "time orientation" would be from "future" to "present". There may be a change of values from those relative to promotion and higher salary to the value of the work itself, or to one's relations with colleagues. Clinical research suggests that at this stage of his life, the individual will tend naturally toward participation and achievement in the non-work areas of his life.

4) Pre-retirement (approximate age: 55-65) - We should anticipate a shift in time and value orientations similar to the preceding stage. What is striking in the contemporary period is that so few people prepare deliberately for retirement and the sudden change in activities, time available and investment of energies which accompanies retirement. The situation is especially

important in continuing education, where few programmes exist specifically for the needs of retired adults who themselves are enrolling in greater numbers. When we consider that the age group 65 and above has increased from 7% to 15% of the adult population since 1900, and that by 1970 half the potential (American) market for adult education will be with adults 45 years and older, we have some idea of the current imbalance between supply and demand in continuing education.

The career pattern of the married woman is divided by Friedman into five stages, each characterised by sharp breaks in family composition and therefore requiring a reorientation in outlook and activities. Using as model a hypothetical family with two children, we have the following sequence:

Stage 1. Married couple - Age of entry, 20 years; duration, 2 years. This is the period of establishing the marriage, forming the household and preparing for the arrival of children. The time orientation is either "present" or "future", depending on the point at which the commitment to the family is made.

Stage 2. Child rearing - Age of entry, 22 years; duration, 25 years. This is the period of career commitment and development for the husband, in which the wife becomes involved in varying degrees. It is equally the period of establishing relationships with neighbours and associates in the city of residence, of activity in child-oriented organisations, and of participation in an assortment of community organisations. In the later years of this stage, the highest rates of women working in the labour force are reached. The value orientation is "instrumental", as opposed to more personally "expressive" concerns. The time orientation, given the importance of child-rearing in this stage, is "future".

Stage 3. Post child-rearing couple - Age of entry, 47 years; duration, 14 years. This is an entirely new phase in the life cycle of North American and Western European women. In 1890, the death of one marriage partner would have occurred an average of 2 years before this stage would be reached. It is essentially a period of release: child responsibilities and expenses have largely ended; the tensions associated with the husband's career development have been resolved. Orientations are in the "present" time, with concern for personally rewarding or "expressive" activities.

Stage 4. Widowhood - Age of entry, 64 years; duration, 14 years. This stage requires an adjustment to loss of spouse, the possibility of living alone, a decreasing level of activity, a smaller circle of friends and some withdrawal from social affairs. The time orientation tends to be "past", and interests are "expressive": hobbies and crafts, travel when possible, artistic activities. As mentioned earlier, women at this age level tend to seek out activities that will bring them into satisfying contact with a small, congenial group.

1.4. Socio-economic factors

Of course, these typologies are highly schematised. In particular, they do not distinguish between the career cycles of individuals at different levels of income, education and occupational hierarchy. Most factory workers have limited possibilities for promotion beyond assembly line work. The "plateau", in the sense of reaching peak income or advancement, comes earlier: late in the 20's for manual workers, in the early 30's for most clerical workers, as against the late 50's for proprietors, officials, managers and professionals. In this connection, Rowntree's classic chart of the "poverty cycle" of poor urban workers in England in 1890 at different moments of their lives is still valid today (10):

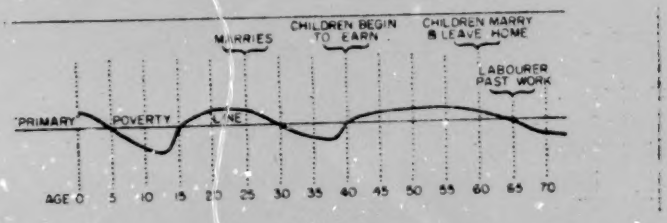

MARRIES
CHILDREN BEGIN TO EARN
CHILDREN MARRY & LEAVE HOME
LABOURER PAST WORK
PRIMARY POVERTY LINE
AGE 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70

Fig. 5: Poverty cycle of poor urban workers

By contrast, the career patterns for professional and managerial cadres, as opposed to industrial workers and clerks, would involve more years spent in education and, as a result, later entry into the labour market; later marriages and a later child-rearing cycle; a time orientation towards the future in view of higher levels of promotion later in life, and a value orientation towards vocational or "instrumental" activities for a longer time.

2. MORE SPECIFIC PATTERNS IN THE LIFE CYCLE: EXPANSION AND RESTRICTION

In order to isolate with greater precision the changes in career, interests and psycho-motor development as they occur during the life cycle, we shall study some specific variables: motivational changes, changes in types of anxiety, in inter-personal relations, in the sense of time and, finally, physiological changes.

In particular, there are two leit-motifs which run through these studies. First, the adult life cycle is characterised by a period of expansion, followed by a period of restriction as old age approaches. We have indicated that young adulthood is a time of vocational achievement, home-making, child-bearing. It is accompanied by feelings of autonomy, competence, stability, expansiveness, extroversion. The middle-aged adult is more pensive, more preoccupied with his emotions, more abstract in his dealings with the environment, often more anxious. Many of the goals of old age revolve around disengagement and constriction: living as long as possible, getting more rest, being protected from exposure to physical handicaps, preserving one's prerogatives in terms of skills, possessions, rights and property.

Jung took the position that a radical "transvaluation" occurs at middle age, that youthful interests and pursuits lose their value and are replaced by less biological and more cultural interests. Through a reallocation of energies, personal values are sublimated in social, religious, civic and philosopnic symbols. In Hindu thought, the end of one's life brings a spontaneous desire for understanding or spiritual clarification of one's life, and with it a longing for "liberation" from the pleasure-success-duty stages of life which precede old age.

This shift from active to contemplative pursuits intersects with the second theme or leit-motif, the change in values during adult years from egotistical desires to a sense of cultural and social responsibility later in life. There are a number of logical explanations: as the principal career drive is completed at 45-50 years of age, the adult, assured of economic security, can turn more readily to community affairs. Older age groups tend also to inherit the key positions of social responsibility. It may also be that older people have a cumulative investment in existing social and political institutions which they have every interest in "conserving" or protecting from the next generation. But here again, Jung's "transvaluation", Erikson's notion of "generativity" and the Hindi doctrine of a "need for duty" at middle age suggest that psycho-dynamic factors are also at work.

2.1. Changes with age in leisure and interest patterns

In studying leisure or recreational interests through the life cycle, we note the fluctuation from growth and expansion to increasing detachment with age. The infant's play, for example, is different during the first 12 months (exploring one's own body and its capacities; seeking new sensory experiences) than in the ensuing two years (manipulation of blocks, imitating elders, playing with vehicles). From 4 to 6 years of age, the child loses interest in toy animals and comes to enjoy plasticine materials and being read to. If we then set out in graphic form the change of interests from ages 12 to 21, we note an increase in social affairs and a decline in activities requiring much physical activity or expense of energy (11):

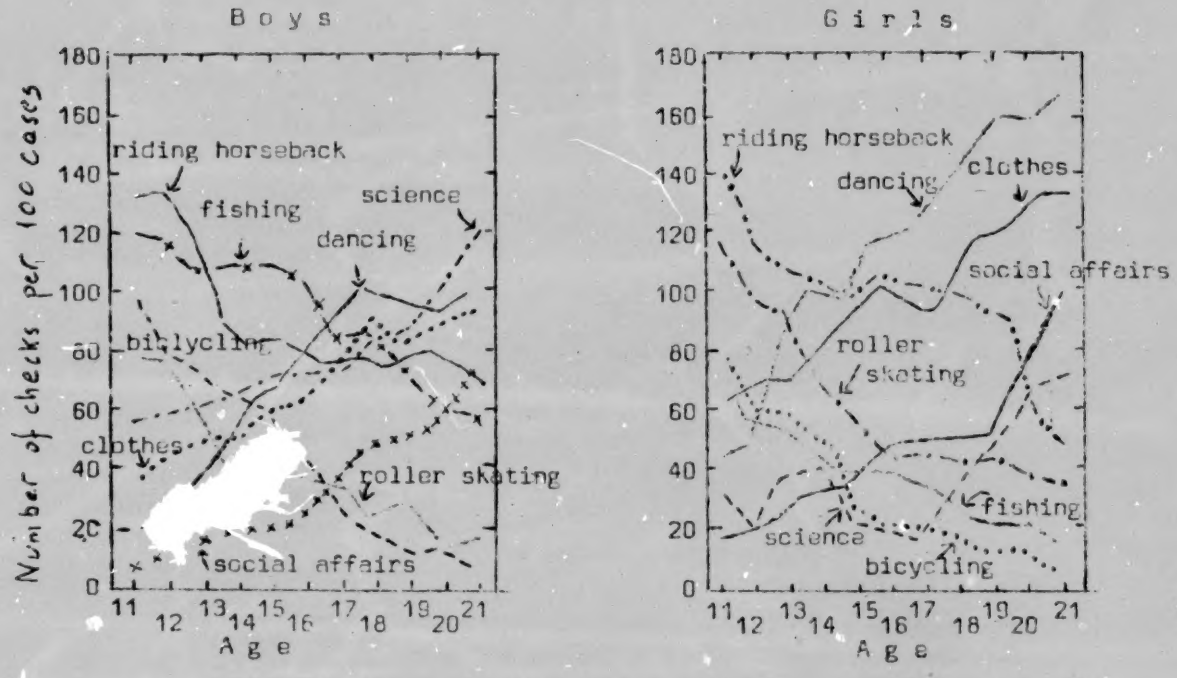


Fig. 6 Changing interest and behavior patterns through adolescence

The pattern during the adult years changes once again. Between ages 25 and 55, the most significant change involves a decrease in activities involving physical skill and daring. Interest increases with age in such relatively sedentary and relaxed activities as gardening, visiting museums and art galleries, reading a book (rather than seeing a film). There is also a decline of interest in linguistic activities involving writing, and a general dislike for changing activities. Older adults, as is well known empirically, prefer to work in one place rather than change, prefer methodological work and methodological people, like regular work hours, prefer more cautious or conservative people - owing, presumably, to a rigidity of ingrained habits and to loss of energy.

By way of illustration, we reproduce a chart resuming the voluminous data on preferences with change of age for various activities. The data comes from Strong's still quite valid studies of vocational interest in the 1930s (12):

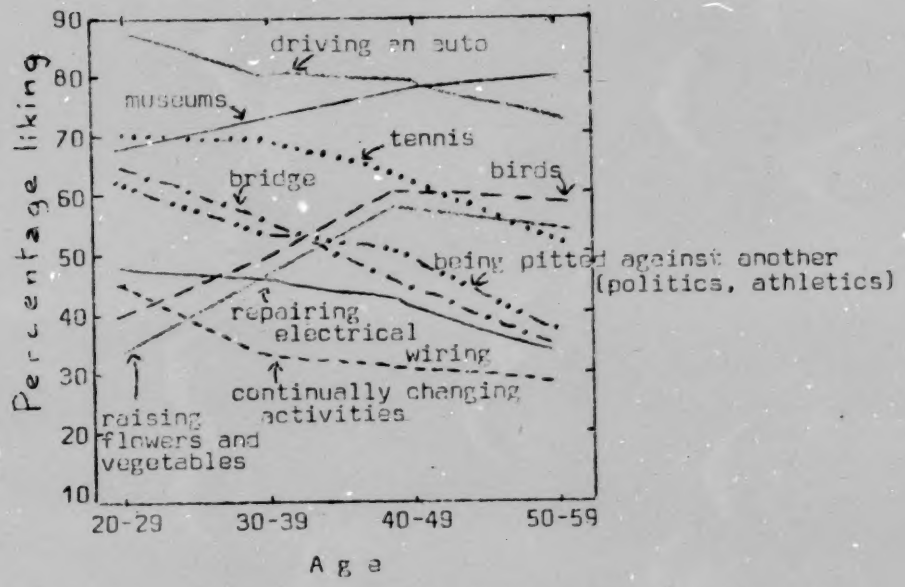


Fig. 7. Changes with age in interests or diversions

There are parallel changes in such intellectual interests as reading. Before the age of 9, children prefer short, elaborately illustrated and fanciful stories of animals, fairies or other children. This gives way to a taste for adventure stories, science, invention and history. Interest in news of crime and disaster increases with age, as does interest in literature on public affairs. Non-fiction is read increasingly as one grows older, although women continue to read more fiction than men. There is evidence that the quality of reading material increases with age but, at the same time, many adults never read a book after obligatory schooling is over.

We are just beginning to design research allowing us to understand how different age groups represent the life spaces around themselves - how the world looks different to a retired professional, a middle aged housewife and an adolescent. At a general level, for example, younger people of school age play more with their environment, whereas older people "play" with concepts. The younger are more concerned with present experience, the older with future power. School children create more for the experience of creating, while older people create to achieve, to produce new products. In fact, as people grow older, their patterns of inquiry tend to shift from an existential and intrinsically motivated playful experience to more pragmatic, goal-oriented work experience. Perhaps, very simply, the explanation is that pressures are greater

for the adult from the environment to conform to external judges and external criteria. Curiously enough, when environmental pressures are lower for older people - those in retirement - we find a return to types of interests and creative activities which accentuate the "playful": intrinsic motivation, heightened fantasy and a concern for immediate, pleasurable experiences.

At this point, we may insert a note on changes in moral attitudes through the life cycle. Studies of religious participation show a peak at 15-20 years of age - the years of the so-called identity or metaphysical crisis in adolescence - following by a far lower rate of religious observance under age 50-60, after which participation returns to the higher rate of early adolescence. One original study of moral attitudes from ages 11 to 21 shows a number of changes in young people's views of what constitutes "sinful behaviour" (13):

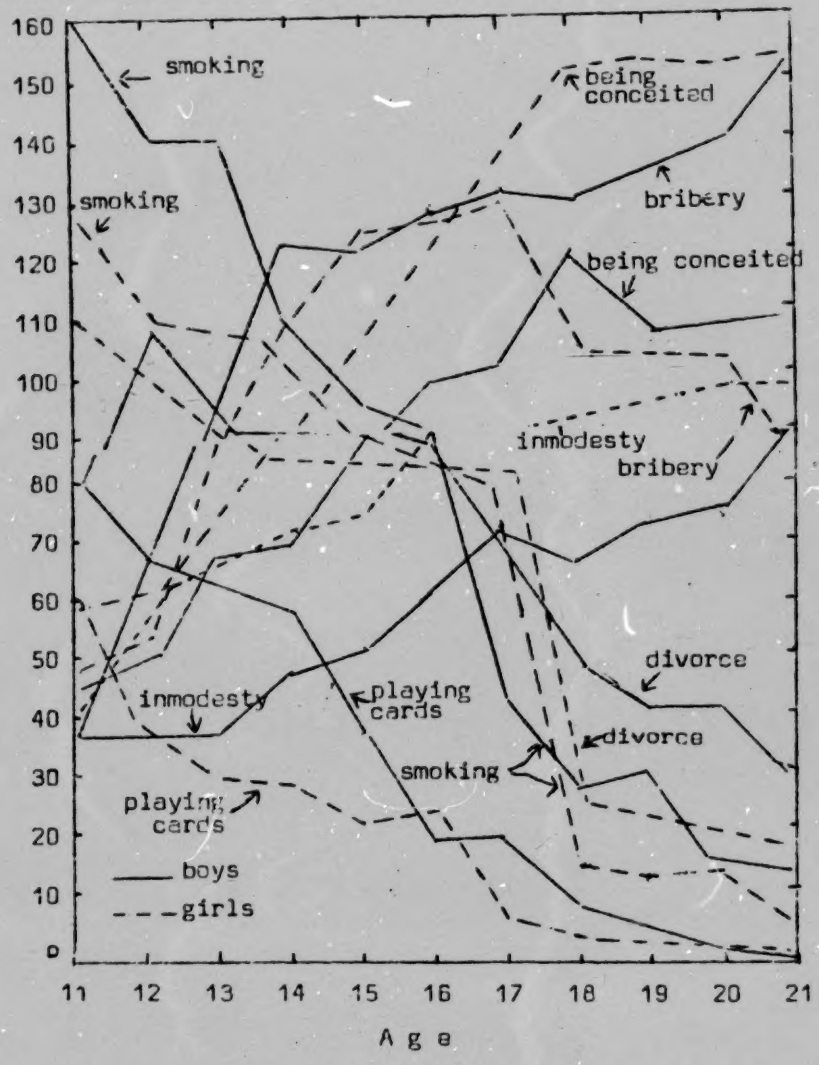


Fig. 8. Changes from ages 11 to 21 in things thought to be "sinful".

There are also differences in moral attitudes during maturity and old age. For example, older people are more annoyed than middle-aged persons by what is often called "borderline sins": indecent dressing, women's drinking in public, sex education for children. This trait is aligned with a preference for conservative politics.

2.2. Emotional development: prevalent fears and anxieties

The changes of interest, career and motivation are also reflected in the types of worries, fears and anxieties which predominate at different age periods. Children fear imaginary creatures or homicide. The "late adolescent" is more worried about final diplomas, finances, finding work, physical appearance (14):

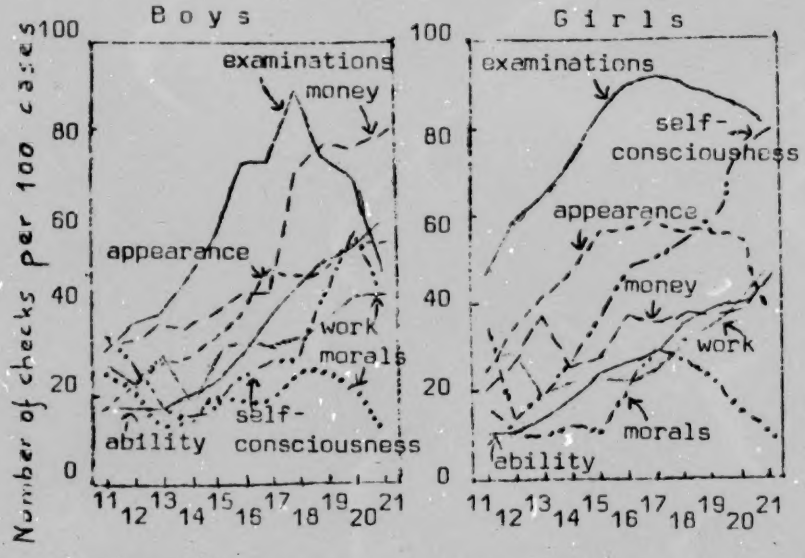


Fig. 9. Age trends in worries and anxieties during adolescence (population of university students)

Young adults are concerned about sexual companionship, vocational promotion and lack of confidence in personal relations, among other things. In middle age, the principal worries are poor health, marital difficulties, political convictions and the sacrifice of important hopes and ambitions. Between ages 55-70, adults are concerned with loss of work, efficiency, death and poor health, financial problems, dependence on others and family relationships. There are a number of studies suggesting an increase in neuroticism in old age, with a steady decline in "adjustment" scores on personality tests after age 30-35. Similar evidence appears from projective tests, although the data is highly controversial in this area. Older people are characterised as more submissive, having less self-esteem, making more disparaging comments about themselves, showing more insecurity from environmental pressures than those under 70. Recent studies also indicate that lower social classes score significantly higher in neuroticism after retirement than do retired professional men or managers - a finding with important implications for programmes in continuing education.

2.3. Changes in interpersonal relations

The theme of increasing disengagement with age appears as well in research on interpersonal relations. We know, for example, that infants are uninterested in other children until approximately 10 months, and that there is a rapid increase of interest in others and in being noticed by others up to 5 years of age. The well-known decrease of interest in playmates of the opposite sex during puberty is another symptom of changing friendship patterns. Adult relations, by contrast, remain fairly stable after adolescence, with the exception of old age, when the number and frequency of interpersonal relations tend to decline - due presumably to death among one's age group, as well as to the heightened desire for "disengagement" mentioned earlier. Strong's data, alluded to above, also shows a decline of interest in entertaining others and a preference for privacy as age increased: spending time at home, having a few intimate friends rather than many acquaintances, disliking too rapid familiarities on the part of strangers, and, significantly helping others with their difficulties (15):

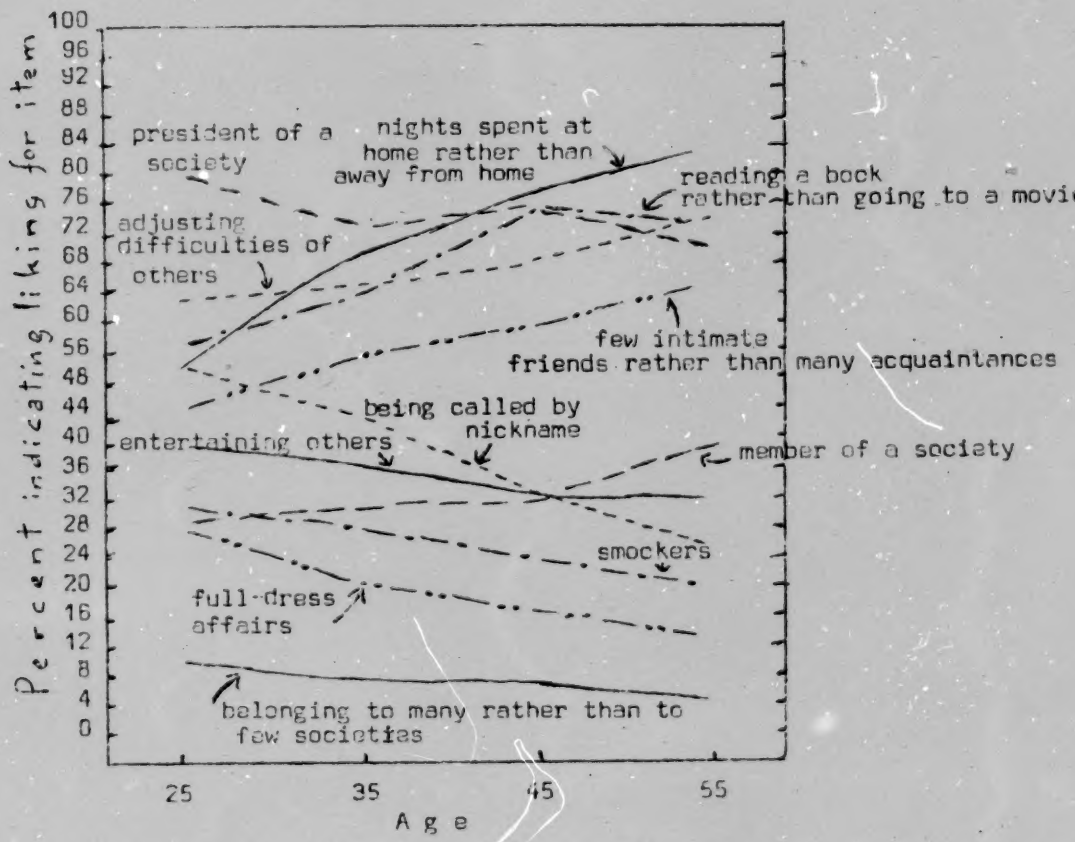


Fig.10. Change of interests in social activities with increased age

2.4. Changes in the sense of time

As Friedman notes in his model of career patterns, the sense of time changes through the life cycle. It makes a great deal of difference whether the future lies ahead (as perceived by an adolescent), is here (for the 40 year old man), or is in the past, as is the case with many older adults. Developmental psychologists have indicated how, in early childhood, the psychological future is vague and undifferentiated - how it extends only slightly ahead of the present moment. For the adolescent, by contrast, the future appears to be infinite, with a multiple choice of possibilities anticipated on the level of fantasy. It is only in the late 20's or early 30's that time becomes finite to the adult, and that progress in one's career must be weighed in relation to the amount of time one has remaining. There is a greater distinction with age between past, present and future. Actions of the present are more clearly defined as a means to a future end. Goals must be modified and made more specific; self-evaluations tend to be made more realistically. The projective tests and clinical interviews with adults between 40 and 55 years of age are replete with the theme of "time running out". This phenomenon may aid to explain the observation often made by adult educators that middle-aged persons require courses in which instructional objectives, methods and examination criteria are made precise at the outset.

Of course, there are a number of cultural and economic determinants. For the woman of 35 seeking marriage, for the 40 year old clerk aspiring to an executive position, for the 60 year old scientist seeking to finish a series of experiments before retirement, time is exceedingly short. Similarly, there are important social class differences in the sense of time. Lower class children - and, to a great extent, adults of low SES as well - are characterised by more rapid "tension-release sequences", which is to say that they are unable to plan far into the future - unable to put off immediate desires in favour of future rewards or gratifications. They also tend to view the future as indefinite, vague and diffuse. The absence of precise plans for retirement in the case of factory workers, as opposed to cadres or professionals, is a case in point. In one interesting study, it was found that middle class children and adults tell stories (on the Thematic Apperception Test) with longer time episodes than lower class subjects, indicating thereby a greater ability to work toward deferred goals.

2.5. Changes in cognitive and psycho-motor characteristics

We shall attach special importance to the research on bio-physical maturation in adults. There is a compelling need to complete Piaget's studies of cognitive growth in children with analogous work on cognitive changes in adulthood and old age. Until very recently, for example, the prevailing view among educational psychologists was that adults were incapable of learning new skills or attitudes after the age of 45 or, alternatively, that the rate of decline in adult intelligence was so steep after adolescence that investment in adult education was largely wasted.

The basic issue here is that of "neural plasticity", the capacity of an individual to change learning "sets" (assimilate new information from the environment) or change his patterns of behaviour. The thesis has long been that mental decline accompanies physical decline. Since physical growth stops at age 18-20, presumably mental growth must stop as well. In effect, the first battery of intelligence tests developed by Wechsler showed a steep rise in intelligence (*) between ages 7 and 20, with a gradual decline thereafter. But Wechsler was obliged to revise the peak of "maximum intelligence" from age 20 to age 35 and, in 1950, he revised his calculations once again. The total score was estimated to increase steadily until age 35, with a far more gradual decline thereafter - on the order of 1% per year - than he had supposed earlier. The level of intelligence of a man 55 years of age was calculated as equal to that of a boy of 14. Wechsler data correlates quite closely with other batteries, such as the Army Alpha and the Otis Group Scales:

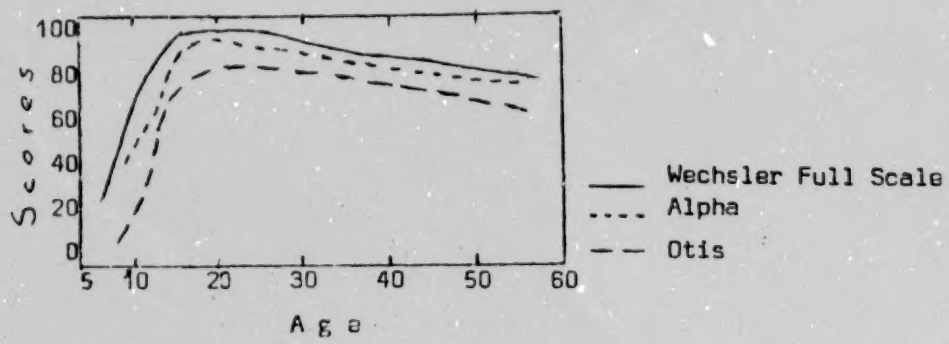


Fig. 11. Average scores on the Wechsler Individual and Otis and Army Alpha Group Scales between ages 10 and 60.

The clue to Wechsler's revisions lies very likely in increased schooling. Successive generations passing these intelligence tests scored higher as a group. The Army Alpha test, first used in 1914, had a median of 62; in 1942, the median was 104. The period corresponded with an increase in obligatory schooling from 8 to 10 years. What seems to have happened was that, since few people in the early years of the century were able to continue their education beyond the age of 15 - and since the overriding thesis at the time was that intelligence tests measured innate endowment which was independent of education - the thesis gained acceptance that innate ability ceased to exist after adolescence.

(*) Defined as "the global capacity of the individual to act purposefully, think rationally and to deal effectively with his environment".

What remains valid in this data, however, is the tremendous range of ability at each age as measured in these tests. Some men of 65 years of age outperformed most or all subjects tested at age 15 or 25. For those who read little, worked on tasks requiring little intellectual exercise or in highly standardised environments, the decline in intelligence scores was far steeper. Factory workers, interacting with machinery rather than with other persons as do cadres or supervisors, are the most endangered by mental atrophy in light of the nature of their working conditions. The key being the extent to which intellectual abilities continue to be used after formal schooling, the crucial variable becomes the potential of the working environment for stimulation and mental exercise. Until recently, to be sure, most jobs required little adaptability during the career of a worker. At present, however, the retraining of workers out of school for more than 10 years has become one of the most difficult tasks for adult educators.

On the other hand, for those whose work demands continuous reflection, perception and judgment and whose educational level is higher, the intelligence scores do not decline with age. With some groups, in fact, the level rises, as we can observe from Terman's studies of a group of gifted children followed from birth to age 50 (16):

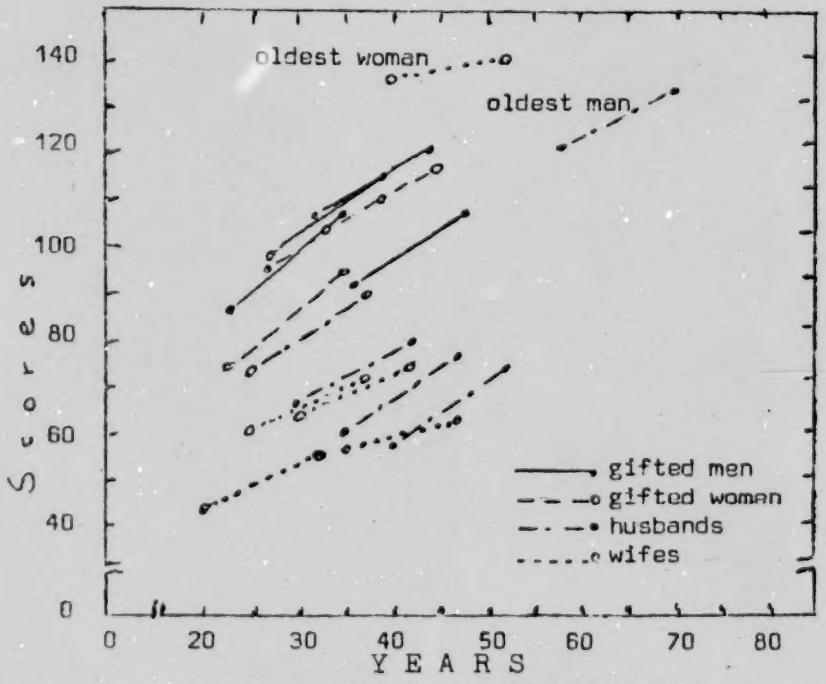


Fig. 12 Increase in scores with age of gifted adults (concept mastery test)

In sum, intelligence tests show closer correlations between persons of the same educational background than between persons of the same chronological age.

This is not to deny the evidence that gradual organic changes take place after age 25-30 which have a direct effect on mental functioning. The fundamental changes in lung capacity, blood pressure, digestive fluid and sexual activity have profound effects on the life cycle in terms of dynamism, preoccupations, vitality, general physical appearance and physiological functioning. Cell tissues are more dry and, as a result, grow less rapidly and are repaired more slowly. Body cells become less elastic. There are notable decreases in the strength, speed and intensity of neuro-muscular reactions, indicating that the central nervous system is less sensitive to outside stimuli. The lower rate of basal metabolism with increasing age has led some neuro-physiologists to attribute the adult's changing sense of time to physiological factors. In addition, in all cases of physiological maturation, it is difficult to separate hereditary from environmental factors. Studies of identical and fraternal twins indicate that heredity plays a significant role on psycho-motor change rates during adulthood.

Of particular importance in adult learning are the changes in the brain. Reduction in brain weight with age suggests a decrease in the neurological base which supports intellectual functioning. In the majority of cases, the maximum brain weight of 1400 grams is attained at age 14. Weights at age 50 are approximately 1355 grams; at age 70, 1300 grams. At age 80, brain weight (1210 grams) is near the level of the 3 year old child. These changes signify a gradual cellular atrophy, a decline in grey and white matter and a smaller brain volume relative to skull capacity. There is a decrease of cerebral blood flow and a consequent decrease in oxygen consumption in existing brain cells. The decrease in the total number of cells is most marked in the frontal cortex.

At the same time, learning depends on the condition of the central nervous system, and age changes result in a lessening of speed of reactions. Like the cortical area, there is a slower flow of blood in veins and arteries and a slower passage of neural messages through the nervous system. This signifies a slower rate of apprehension, perception, thought and action. The gradual decline in vision after age 40 (due to increasing density of eye tissues; loss of water, fat and elasticity; less transparency of the cornea) affects intellectual functioning, as does the loss of acuity in hearing. These factors have an impact not only on physical functioning; they also have psychological effects. For instance, older adults are known to have less self-confidence in traditional adult education settings because they often hear imperfectly and feel unable to keep up with lectures.

Speed of learning is of particular importance in intelligence testing. The early tests of Thorndike were based almost exclusively on speed of response, where adolescents far out-performed adults over 30 years of age. The young have superior hearing and vision, can observe and reason more rapidly, and have their learning "sets" less cluttered with ingested ideas, facts

and habits. Subsequent experiments by Welford and Lorge, in which the factor of reaction speed was eliminated, showed that performances were more equal and that adults were generally more accurate. We may generalise from these results to propose that where strength and speed are at a premium in a work situation, younger adults will outperform older adults. If accuracy, steadiness and reliability are paramount, older subjects will perform better. Looking globally at the changes required in the labour market, it would appear that speed, strength and dexterity are less important in most middle-level jobs than logical planning and interpretation of more abstract information. But it is difficult to eliminate the factor of speed of response altogether, since it constitutes one of the basic properties of any test of intelligence.

If we attempt to sort out the skills which deteriorate with age from those which remain stable or even improve, we can postulate a broad distinction between <u>fluid intelligence</u> (Gf) and <u>crystallised intelligence</u> (Gc). The former will decline with age and the latter remain more constant. Taken together, the curve of intelligence remains practically static up to approximately 60 years of age (17):

21.

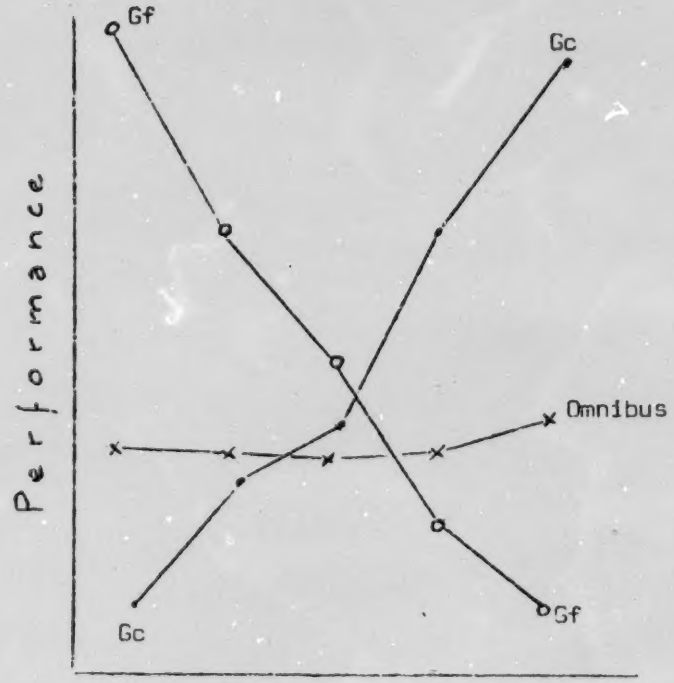


Fig. 13 Performance as a function of age in two types of intelligence scores (sex, education, visualization statistically controlled)

Fluid intelligence (Gf) refers to abilities in which formal education and general experience play a minor role. The changes are more strictly biological or physiological. Adults' performance declines on tests of memory, observation, speed, cogency and logical reasoning. Adults perform less well with age on the Wechsler digit symbol test (learning that certain numbers are paired with certain geometrical designs) and on analogies tests. The former test calls for rote learning and the latter for unusual associations of words. Older adults do poorly on spatial relations tests, where reduced visual acuity is a handicap, and in short-term memory tests, where a decline in the speed of central nervous system functioning impairs performance. Older adults are less able to change learning sets or learning expectancies unless signals are given in advance - a sign that learning habits are more deeply entrenched. Thus, adults perform less well than school-age youth on tests involving novel situations where reasoning and logical problem-solving are required. The older adult, in particular, tends to solve problems through a subjective approach - not unlike that of a young child - rather than by means of rational processes of thought.

On the other hand, where previous learning is an asset, as in Gc, older subjects improve with age, at least up to age 70. Here, where intelligence is defined as accumulated knowledge, adults perform increasingly well - provided they stay in practice - on tests of vocabulary, general information, similarities, arithmetical reasoning and perception of relations. If we compare the four tests commonly used to determine intelligence quotient in children and adults, the relationship between Gc and Gf with increasing age becomes more clear (18):

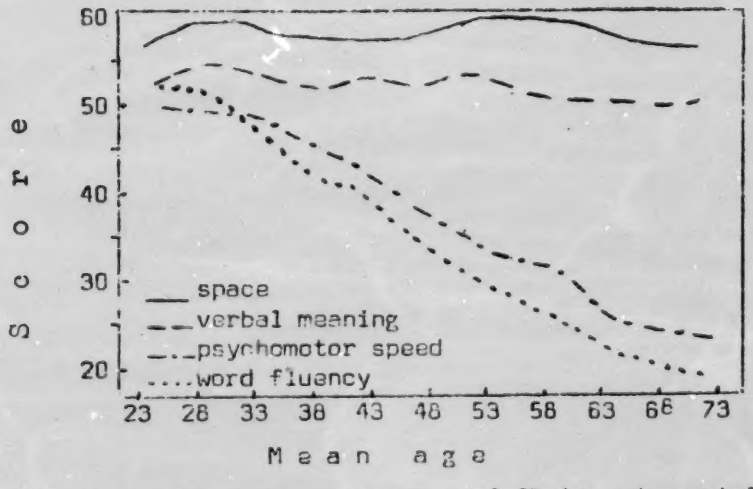


Fig. 14 Longitudinal performance on measures of fluid and crystallized intelligence

There are 3 special considerations which must be pointed out in this area of intelligence testing for adults. First, adults have lost the habit of taking intelligence tests, particularly in comparison to school-age children. Secondly, adults are more sensitive to being tested than younger people. They tend to see such tests as personally threatening, possibly because of an increasing lack of confidence in their ability to do things outside the range of the familiar and routine. Finally, the majority of tests measure academic abilities and often require subjects to carry out such non-functional tasks as the memorisation of word lists or nonsense syllables. There is evidence that adults do not perform to full capacity in situations which they do not see as relevant. Clearly, there is a need for tests which are less divorced from ordinary working situations.

In sum, what adults lose in maturational decline is compensated by input from the environment. What is lost in reasoning, speed and perception is gained in experience, knowledge and wisdom - provided, of course, that mental stimulation is constant. We can also assume that motivational factors play a role here; adults will continue to learn if they are able to concentrate their learning in areas of experience in which their personal interests lie as well.

2.6. Acquisition and stagnation of adult or formal logic

Over the past half-century, Piaget has studied the development of mental operations in children from birth to 15 years of age. This development is ordered in successive stages. All children and adolescents appear to pass through the same succession of stages, but the speed of development can vary from one child to another and from one social environment to another.

The final stage, which is reached between ages 11 - 15, is that of adult or "formal" thought. The adolescent is able to perform 2 types of operations which he was unable to do earlier. First, he is able to reason in terms of verbally stated hypotheses and no longer simply in terms of concrete objects and their manipulations. This means that he can deal with abstractions and can discuss problems of which the elements are not directly in front of him or of which he has no experience. He is also able to understand and draw the logical consequences of viewpoints other than his own.

The second characteristic of formal thought is the capacity to combine the elements of a problem or a proposition in a number of ways until the solution is found. This involves keeping several of these elements in one's mind and looking at each in combination with all the others. This capacity, of course, is the basis of most mathematical and physical reasoning.

For example, given the relative weight of 3 horses and the height of 3 jockeys (horse a is heavier than b but lighter than c; jockey x is smaller than jockey y who is smaller than z), the adult is able to find the smallest jockey and the smallest horse, whereas the child of 8 or 10 usually cannot. Or, to give another example, an adult should be able to fill in the missing numbers in the table below:

1	3	9
4	(?)	(?)
16	(?)	144

In highly industrialised countries, where obligatory schooling continues to age 16 or 17, most adolescents attain the formal stage of mental development. In fact, one of the tasks of the school is to exercise adolescents in the use of logical thought, as any developed technological society depends on the ability of adults to reason logically, form and verify hypotheses and make decisions on the basis of abstract evidence. Related traits, such as tolerance of other points of view or an understanding of legislation, also call for formal thought. Reading, of course, helps to develop the capacity for logical thinking.

In a number of countries, however, anywhere from one-third to two-thirds of the population may not attain the level of formal operations or may only reach that level at the age of 20 or 30. Adolescents in these countries leave school at an age when they are on the threshold of formal operations, and they take up jobs which do not call for reasoning ability but rather the manipulation of concrete objects (factory work and manual labour). Their thinking tends to remain "concrete": an inability to deal with problems which are not physically in front of them; inability to follow verbal instructions or the chain of thought of another person; tendency to reason in terms of right-wrong, black-white; inability to comprehend written sentences having propositional clauses beginning with "therefore", "since", or "because" etc.

Recent research in France and Switzerland (19) suggests that even in industrialised countries, some 10% to 15% of the adult population is still at the pre-formal or concrete stage. It is not clear whether these adults have never acquired formal thinking or whether, having reached that stage but having taken jobs which do not stimulate formal operations, there is a

process of stagnation or regression. In either case, this research shows that widespread - or even obligatory - adult education should be provided for on the grounds of social hygiene alone.

There have been some experiments in training these adults to think logically. Adults in such programmes go through a number of logical and mathematical exercises built around the work or home setting and calling for logical or combinatorial operations. It turns out that many of them can already perform some of these exercises, since they deal with situations every day or frequently involving the same kinds of operations. The learners make progress as well in performing operations with which they have had little if any day-to-day experience. But these exercises tend to be artificial or scholastic, and the initial gains often disappear in the following months if the environment around the adult no longer provides activities calling for abstract reasoning. Perhaps the most successful but unresearched example of bringing adults from the concrete to the formal stage in thinking is the cultural literacy programme of P Freire, which will be discussed later.

3. THE INSTITUTIONAL SETTING OF CONTINUING EDUCATION

Although we have a relatively good understanding of the sequences of adult growth and development and within those sequences the types of prevailing motivation and ability, these findings have been put to limited service in educational practice. The reasons are multiple, but 2 considerations seem to stand out. First, continuing education has not been planned as a whole, unlike the public school system. A number of different agencies, both commercial and non-profit, began to offer programmes in which, for the most part, the demands of the economy, the doctrines of the Church, the profit incentives of promoters or the more mindless leisure-time interests of consumers were given the most importance. As we have no general idea of which type of adult we are interested in educating and to which end, each agency substituted its own particular, often mutually conflicting objectives. At the same time, there was no precedent for a system of education which could deal with a wide diversity of individuals of different ages, interests and capacities, and so models were sought which would homogenise adult populations into a uniform group of - more or less - overgrown school children.

3.1. Economic basis of continuing education

If, in the course of the 18th century and early 19th century, the doctrine and goals of the Church determined the programmes of continuing education, in more recent history, economic objectives have held sway. The economic rationale for educating adults is that an individual represents as much a capital good as does such physical capital as machinery or buildings, and that "investing" in his education will yield a greater return in terms of his productivity in the labour market (*).

(*) The assumption is that improvement in the quality of the labour force is one of the major sources of economic growth. The rate of economic growth is seen to depend on the increased education of the labour force and, in particular, on the advances brought about through education of greater technological knowledge and better managerial skills. In fact, it is argued, physical capital would be wasted without increases in skilled manpower and perfected techniques of production.

The classic proof for this thesis is the so-called "residual factor": the notion that economic growth cannot be accounted for entirely by rates of productivity and must therefore be attributed in part to the increase in the average educational attainment of the labour force. For example, economists have calculated that one-fifth of all economic growth (as measured by GNP) during the past 30 years in industrialised countries is due to increased education in combination with "a general advance in knowledge".

This thesis is fraught with problems, notably in the correlation made between numbers of graduates and rates of economic growth. In developing countries, it has led to unemployment for the most educated, as the educational system turns out university graduates faster than the economy can provide jobs for them.

There is an implicit assumption here that the type of education given in national school systems will be adapted to conditions of employment, which is seldom the case and which, in itself, would be a very restrictive mandate for an educational system were it put into practice. But if the thesis is unproved, the logic is nonetheless appearing: that the better educated person is likely to do a better job than a less educated person. Presumably, he does the same things better and does more things. He is more receptive to new ideas and more aware of better production techniques (20). The same proposition, of course, is applied to all training and apprenticeship programmes for young people.

In terms of national priorities, these criteria are operative on 2 fronts. Advanced economies have educational needs in connection (a) with the shortage of persons with critical skills in leading economic sectors and (b) with a surplus of labour in the traditional or low-skill sectors.

Here we find the numerous governmental programmes in continuing education for those whose jobs are menaced by automation or for others in more advanced technological sectors where the specific types of work required in the future may not even be clearly defined at present (*).

(*) For example, the US Office of Education estimates that 70% of those children enrolled in primary school will eventually work in occupations which do not yet exist. The implications for those already in the labour market are momentous. We should recall that one-half of the working population in advanced industrialised countries holds jobs that did not exist at the beginning of the century - those connected, for example, with the airplane, the automobile, the use of oil, atomic energy, plastics and refrigeration. A number of economists have predicted that the entire technological labour force will be obsolete by the year 2000.

Such statistics as these have been over-dramatised. But the situation does exist whereby continuing education will become a crucial factor in economic survival, both as concerns educational opportunities for the unskilled and for the highly skilled. In the latter sector, in particular, schooling has become a part of normal adult life. Military officers, for instance, now spend approximately one-third of their career going to school. And the growth of adult education agencies to service the growing demand has been no less spectacular: an increase in France alone from 82 agencies in 1900 to 323 agencies in 1949 and, in 1969, to some 940 agencies.

In market economy countries, the state is the only institution willing and able to provide aid to the unemployed, disadvantaged or even to the semi-skilled. Commercial and industrial firms operate essentially by "profit maximisation", ie they invest only in training for those who can be educated at a minimum cost with a maximum benefit to the investor. In cost-benefit accounting, it is therefore more profitable to invest in more training for a senior cadre since (a) the initial investment in executive personnel is higher, (b) techniques of management and control change more rapidly than for middle or lower level employees and (c) mistakes made by cadres are likely to be more costly to the firm than amounts spent on their further training. It is also more profitable to invest in training for a man of 20 who has 45 years of productive capacity ahead of him than for a man of 45 with only 20 years left in the firm.

What emerges is a situation whereby economic imperatives tend to profit further those who have already most of the privileges (executive personnel with superior education as a background) or the greatest amount of intrinsic motivation (young people). The state, for its part, may take responsibility for many of the unskilled or untrained, most of whom are also young. Educational agencies in the private sector will accept only those courses which allow for a profit, or at the very least, will pay their own way, which involves principally those programmes which

the State or the commercial/industrial firm will underwrite. These courses are highly vocational in most cases (*).

(*) In a recent French survey in 1960 of 317 firms with over 300 employees, the highly limited and strictly vocational nature of continuing education comes out in relief. Annual expenditure per employee is 255 F, with a breakdown by category of employee of:

- 181 F per production worker
- 355 F per administrative worker
- 1400 F per engineering and executive staff worker.

In the course of a year, some 45% of the staff takes further training courses (25% administrators, 20% production workers). The duration of these courses is:

- less than one week: 73%
- 50 to 100 hours: 16%
- 100 to 150 hours: 4%
- over 200 hours: 4%

30% of the training programmes is in the particular sector to which the firm belongs, especially production techniques. 25% is devoted to general techniques (computer science, market research, motivation studies), 20% to programmes on organisation and management, 25% to updating general basic proficiency, particularly in mathematics and foreign languages (21). The general estimate is that firms can afford to keep only about 10% of their personnel in training at any given point, whereas the majority of small firms are unable to provide any continuing education unless the programmes are given to conglomerates of employees from smaller firms. Yet the above-mentioned study indicates that the total expenditure for the 150,000 persons involved in further training, including the wages and salaries of trainees, amounted to only 1.8% of the total wage and salary bills of the participating firms.

The provision of training for employees at different levels of occupational hierarchy can be traced historically by means of the following graph, taken from a recent French study (22):

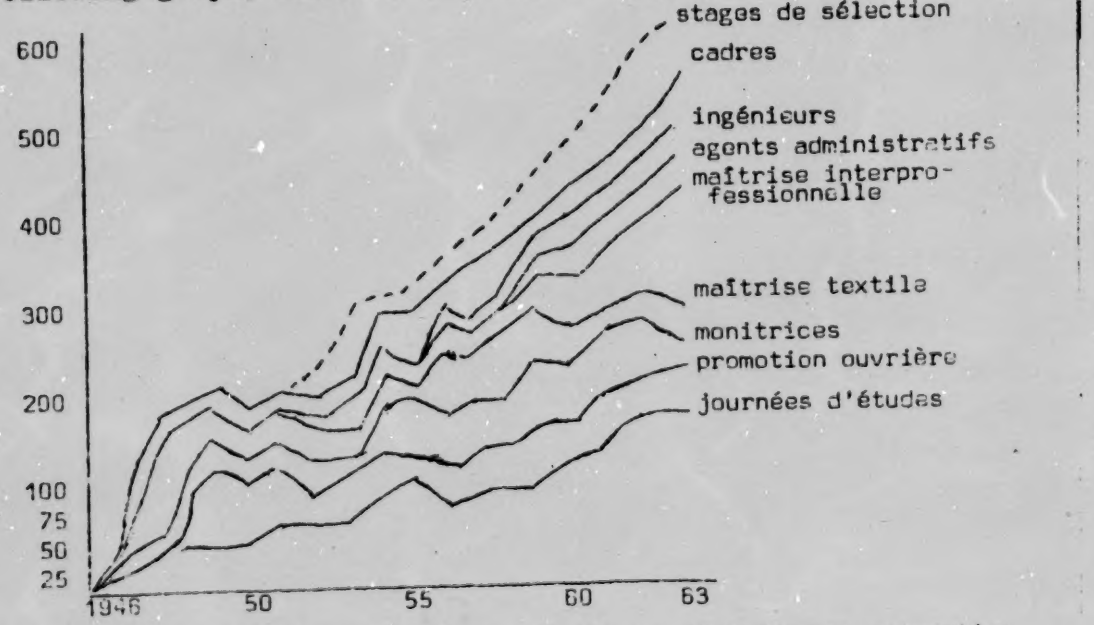


Fig. 15 Number of days of further training for employees of different occupational status in France, from 1946 to 1963

To be sure, it is only logical that employers refuse to pay the expenses of non-vocational training for their employees. But the result is that we have no agency deliberately providing for such non-professional areas as liberal studies, controversial topics, creative arts, human community relations and other subjects in the cultural and social sciences designed to aid adults to express themselves, understand themselves or, in current jargon, adapt to the increasing pace of social change (styles of thinking, living, relating to others and other dimensions of "future shock"). It also means that the mass of the population - the middle-aged, semi-skilled or white collar employees who are beginning to lose interest in their careers and to run the risk of mental atrophy - are provided with continuing education mainly through the mass media.

There are, of course, community agencies which offer programmes in continuing education for this population: adult education organisations, labour unions, public schools, libraries and museums, health agencies, television networks and universities. The provisions, however, are far inferior to the potential demand, which itself is slow in revealing itself for a number of reasons: low priority given to courses of this nature, lack of information about possibilities, inaccessibility of the courses, discontent with the highly traditional format of many programmes, lack of involvement by participants in the initial design of the courses, loss of interest with age in personal development, preoccupation with other "developmental tasks", decline of intellectual powers, painful recollections of academic schooling. It is also more difficult to measure the benefits in quantitative terms of programmes in intellectual and cultural subjects.

Very likely, the lockstep will be broken as the educational level of the population rises and as labour syndicates press their demands for legislation to provide for paid study in adult life. The costs, if absorbed by the firm, will become part of production costs - and thereby raise consumer prices - or will be covered fully or partially by the state through a system of loans repayable by the individual according to prevailing rates of life insurance. Recent legislation in France, USA and in Scandinavian countries points to this direction of reform.

In the long run, we shall come round to the sensible principle that a young man of 15 or 16 has as much right to work as to study, and the adult as much right to study as to work. This will be less a gesture of social democratisation than a revision of the unintelligent way in which we space events in our life cycle. It is worthwhile pointing out that the practice of squeezing into the age period of 15 - 30 years the terminal stages of education, the major part of energy for vocational promotion, and marriage and family formation dates from an historical context in which life expectancy was at 40 to 50 years. We are continuing to divert still more public

resources for education into the extension of public schooling for those young people who need, above all, experiences of adult life to which they can relate what they have learned. We should have long since outgrown the theory that one can only learn before one becomes an adult by admitting that one learns certain things best as an adult.

3.2. Existing agencies and major themes in continuing education

The agencies involved in continuing education can be divided roughly into 4 categories:

1. Agencies developed primarily for educating adults, eg university "extension" and evening classes, "popular universities", correspondence schools.

2. Agencies developed originally for children and youth - for the most part public schools - which, in response to the need, have elaborated programmes of adult education in public health, community affairs, education and the like.

3. Institutions developed to serve the entire community in specific ways, and which have expanded to include continuing education, eg libraries, museums, neighbourhood or community centres.

4. Agencies founded for non-educational purposes which have undertaken programmes in adult education in order to strengthen their own situation, eg labour unions, religious groups, co-operatives, business and industrial organisations, health and recreation agencies.

Within this constellation of institutions are offered a diversity of courses and programmes. The most functional way of giving an overview of these offerings is perhaps to list the type of objectives set out as justification for the programme - the semantic field of "discourse" in continuing education as it were. By scanning the professional literature, propaganda and advertisements in the media, 3 principal - and overlapping - themes emerge:

1) The need to keep pace with the acceleration of social change

The literature is replete with warnings of "future shock". Such programmes, generally of short duration, emphasise the need for heightened adaptability to the changes in living patterns (increased changes of residence and of place of employment, uprooting and fragmentation of the nuclear family, increased travel, divorce, retirement) and in habits of thought (less ethnocentrism, greater moral tolerance, acceptance of divergent political opinions, less parental control over children) which characterise our era.

The format is generally that of lectures or discussion groups in psychology, sociology, anthropology, economics or a sub-discipline of the human sciences. They concern issues about which people feel strongly (eg parental authority, taxation, immigration, local government) and about which they are slow to change their personal or social attitudes. The more intensive programmes emphasise techniques of social interaction, such as group dynamics, to facilitate attitude change. The more academic format calls for a televised or lecture series on "phenomena of our revolutionary age" - stressing the need to keep abreast of developments in economics, political affairs, technology or medical sciences - and on "the world in crisis", which may include such topics as nuclear warfare, communism, capitalism, overpopulation, environmental pollution, decadent materialism, revolt of the young, under-development in the Third World.

2) The need to continue one's learning as an adult

As we pointed out earlier, adults who do not continue to exercise their minds find it increasingly difficult to learn new skills, change their attitudes or readjust to new situations. Adult learning thus becomes a sort of preventive social medicine, although this is seldom a strong enough motivation for an individual to continue his education. A corollary theme is that certain subjects are more appropriate for adult years than during childhood or adolescence. Courses or readings in philosophy, history, literature and politics - as Plato and Aristotle reminded us long ago - require a good deal of accumulated experience in order to be fully meaningful.

In this category can also be placed those programmes designed to help the adult put his life in perspective, achieve self-actualisation, attain the good life etc. Programme themes include "education for emotional maturity" (human relations and interpersonal communication, differential psychology, adjustment to retirement), "education for intellectual growth" (new methods in science, modern mathematics, linguistics) and "education for aesthetic growth" (appreciation or creation in art, music, decoration, handicrafts).

3) The need to fill adult roles and responsibilities

Here, the adult is viewed in terms of the various social roles he is to play in the course of his life. The mass of continuing education programmes to devote to one of these roles, that of the adult as worker or education for vocational competence. Here we include conversion courses (retraining for new jobs or new skills), adaptation courses (updating or improving skills for present employment), upgrading courses (in order to attain higher qualifications) and career preparation courses (generally for apprentices or unskilled workers). In the

light of the characteristics of technological change as they affect the definition of work, some - but, as yet, very few - of these programmes have moved from narrow skill-training to problem-solving methods of instruction. Simulation or "trouble-shooting" exercises are designed to prepare workers to find knowledge independently, to deal with unfamiliar problems and situations, and to use theoretical and operational categories which enable them to process materials or information as yet unknown to them. In general, although most of the course propaganda are worded in terms of the prospective trainee's self-interest, the principle rationale is that of raising economic productivity for the firm or nation.

A second adult role is as parent, or education for parental competence. This includes programmes offered in school and welfare agencies on child and adolescent psychology and on problems of juvenile delinquency.

A third category is that of the adult as consumer or education for economic competence. This comprises discussion groups and lecture programmes on economic principles or skills in reading advertisements, choosing between competing products and asserting one's rights as consumer.

A final category, of particular importance in socialist countries and in a number of countries in the Third World, is addressed to the adult as citizen and member of a community. Programmes in connection with referenda, national elections, new legislation, religious and moral issues all presuppose a need for educated citizens. They also assume that obligatory education has not been sufficient to impose political socialisation (in order, generally, to protect the citizenry from opposing political doctrines) or to pass on dominant moral codes to children of succeeding generations (in order that strict censorship laws may not be required). The recent increase in "leadership training" for elite cadres in politics, education, labour unions and religion is part of this category as well.

From the perspective of the adult participant, then, we have 5 major groupings of programmes available to him: those directed to his vocational life, to his civic and social affairs, to his creative or "expressive" interests, to his mental and physical health and, finally, to his home and family affairs. If we regroup schematically our previous data on adult interest patterns throughout the life span, we can see how different age groups will be motivated to participate in each of these areas:

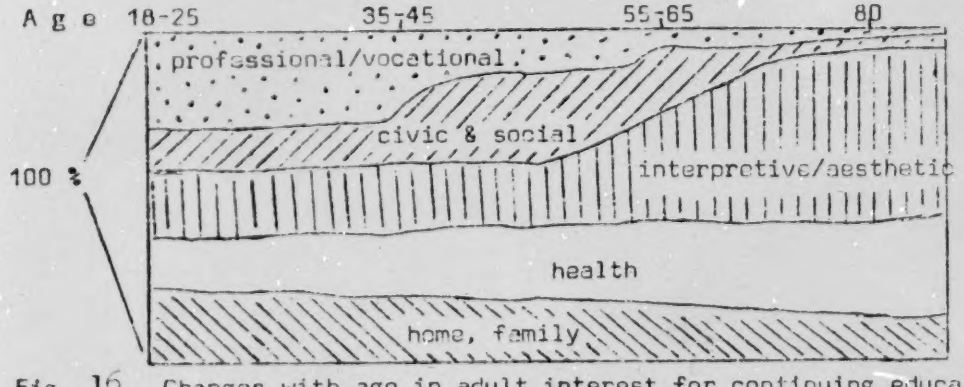


Fig. 16 Changes with age in adult interest for continuing education

4. PARTICIPATION AND PARTICIPANTS IN CONTINUING EDUCATION

4.1. Objectives of participants

The above-mentioned categories of objectives, institutions and types of programme correspond generally to the motivations of participants themselves, although opinions are clearly conditioned by national priorities and by promotional techniques of the agencies. Discounting for an instant the factor of age, when adults are asked their reasons for participating in continuing education, the responses tend to follow a set pattern. Listed in decreasing order, the most frequent objectives are the following:

- to prepare for a new job;
- to learn more about the job held at present;
- to spend my spare time more enjoyably;
- to meet new and interesting people;
- to better carry out tasks and duties at home;
- to become a more effective citizen.

We have already noted the likely changes of interest with age from one to another of these objectives. Another way of classifying participants is by studying the kinds of programme followed by different persons, in order to see whether certain patterns of participation distinguish one class of adults from another. One suggestive typology is that of Houle (23), who sets out three basic learning "orientations". Although highly simplified, Houle's typology has provided researchers with a number of reliable distinctions between individual learners. The first group is called goal-oriented: those who enrol heavily in professional or vocational courses, giving as reasons their desire to secure professional advancement or to retrain for changes in the type of work required in their sector. The second group is activity-oriented. Their motivation is essentially social, e.g. "to be with friends and associates", "to make new friends". The third group is learning-oriented. This refers to those who participate in order to be better informed, to "fill an innate yearning for knowledge", or "to gain the satisfaction of accomplishing an intellectual task".

Subsequent researchers have added other "orientations", such as a societal-goal orientation, which attracts people seeking "to become a more effective citizen" or "to understand community problems". Another category which probes more deeply into some of the fundamental reasons for participation is the need fulfilment orientation, referring to those in quest of relief from boredom, relief from the frustration of personal and vocational worries, and those who are unable to be alone.

4.2. The "achievement motive" and the "affiliation motive"

Some more precise and fascinating psychological research has been undertaken in the past ten years in order to determine what, in particular, distinguishes participants in continuing education

from non-participants. Apart from age-bound factors already mentioned or others of a sociological nature which we shall touch on shortly, there arises a cluster of personal traits which sets apart the highly motivated from the less highly motivated. In effect, the strength of motivation is probably the key variable in light of the present conditions in continuing education. Participants must be prepared to make heavy sacrifices of time and effort after normal working hours, to travel long distances to courses, to stay with diploma programmes lasting far longer than those required at school age, to make financial outlays for books and materials, to be instructed by a teaching corps which has not been trained to teach adults.

This psychological cluster has come to be known as the "achievement motive", following Murray's research into fundamental needs and the applications to experimental psychology by Atkinson and McClelland. Experimental subjects scoring high on "need for achievement" in a battery of projective tests, questionnaires and interviews were characterised as having a need to overcome obstacles, to attain a high standard of excellence and to rival, excel or surpass others. In their responses, subjects show an intense and prolonged effort to accomplish a difficult task, regardless of the content. Under experimental conditions, individuals with high need for achievement tend to learn more when asked to do complex tasks than do low scorers. They are better at remembering incompleted tasks (seen as "challenges"). Their level of aspiration is higher when no extrinsic reward is offered, as is their subjective level of aspiration in comparison with those scoring low on need for achievement. In interviews, high scorers perceive more change in their lives in the coming one, five and ten years, which reflects their intention of acting forcefully on their environment. Their views of (a) the attributes of a good occupation, (b) the importance of hard work, (c) the usefulness of previous schooling and (d) the laying of blame for failure in their lives are significantly different from low scorers.

Those with only a moderate level of need for achievement are more defensive; they tend to "forget" incompleted tasks, show a lower sensitivity to words related to failure in word perception tests, to produce less fantasy material in TAT experiments which could be of an energetic and goal directed nature, and, finally, they respond differently in structured interviews. In short, these subjects seem to be motivated more by a need to avoid failure than a need to achieve success.

Subsequent research has produced evidence that there are cultural factors at work, as well as religious and social class differences. The extent to which different cultures or sub-cultures emphasise independence training in children and the severity of that training are variables connecting achievement motivation with early experiences of children in relation to parental behaviour. High need achievement scores appeared in cases where mothers of 8-10 year old boys more frequently demanded before age 8 such behaviour as knowing one's way around the city, trying out new activities for oneself, and doing well in competition.

However, this was only the case when mothers rewarded their children with physical affection for carrying out these tasks. More extensive ethnographic studies of independence training in several societies indicate that early training carried out in conditions of physical and psychological security may well generate a higher need to achieve.

The work on the achievement motive is far from conclusive, and it has a distinctly American flavour in its entrepreneurial emphasis on competition and emulation of successful models. It does, however, provide us with a psychological variable of participation in continuing education which is more applicable to individual cases than the commonly used indicators: sex, age, education and occupational status. It also suggests that certain kinds of "independence training" may be appropriate for adults, a hypothesis which was successfully tested by McClelland in India.

If the achievement motive helps to explain the needs of those participating in "goal-oriented" or vocational courses, it is less useful for programmes of a non-professional nature. Another of Murray's 20 basic needs, the need for affiliation, has been studied recently in connection with Houle's "activity orientation" and the "societal goal orientation". Those high in need for affiliation seek "to draw near and enjoyably co-operate or reciprocate with a friend or ally", which is the case for the great number of adult education courses in leisure time activities.

High scorers in need for affiliation, however, tend to score low in need for achievement. This has been interpreted to mean that they have a greater need for security, social acceptance and approval. Materials from their projective tests, questionnaires and interviews indicate a concern with rejection, with being outcast or ignored. In experimental situations they are more anxious and conforming than the mean. An interesting detail is that those with greater affiliative needs tend to be first-born children - as such, presumably, they became conditioned to greater dependence on parents who from a sense of uncertainty, bestow more, show attentiveness and nurturance on first-born children.

It does not follow that those participating in continuing education for social reasons are more neurotic than others. These findings do explain, however, some of the motivations of the bored, lonely and often of the aged. More work is needed on the other dimension of affiliative needs: the concern with what Angyal calls "homonomy" - the complement to "autonomy" - or the desire of the person to fit himself to the environment and to share in something larger than his individual self. When we have designed instruments capable of measuring positive affective relationships, compassion or the desire for sympathetic co-operation, we shall be more able to distinguish between the motivations of individuals enrolled in non-professional programmes.

4.3. Additional variables

International or even national typologies are hazardous constructs, and it may also be misleading to look for uniformity in the proportion of persons registering for professional, aesthetic and social programmes. In most countries, of course, the majority of participants is found in vocational courses. The most notable example is the United States, where the market for job-related or "applied" courses has flowered in the general atmosphere of getting ahead in life by improving one's earning capacity. The United Kingdom has a high enrolment in courses of social and community affairs, due possibly to the origins of adult education in that country as a working class movement. But these public affairs programmes are less attended than those held in Scandinavian countries or, interestingly enough, in many East African countries. Courses in aesthetic expression are in demand in the USA and Scandinavia, perhaps because they are known to be unusually well organised. Discussion groups in music and philosophy are more popular in Germany and Sweden than in France and the United Kingdom. Clearly, a multiplicity of factors are operating here, including cultural traditions, quality of the programmes, institutional settings, historical factors, strengths or weaknesses in the school system, desires for social mobility, and the like.

There are, however, a number of variables which remain constant across nations. If we look exclusively at the statistics of formal or organised programmes for adults, three factors stand out in particular:

- Participants tend to be younger than the average national age - The mean age for participation is usually between 34 and 40, with fairly high concentrations in the age groups 20-30 and 30-40 (although we know that the mean is rising at present). The younger participants also tend to be enrolled in vocational programmes, rather than in intellectual-cultural programmes. The first experiences of almost all participants are in vocational courses. Logically enough, vocational motives are dominant for those in the age range 20-40, for married men, divorced women and for people planning to change professions. Non-professional courses are attended by older people, by women in particular, by single men and by those with a higher level of previous education than the average. In the following chart, taken from a recent American survey of continuing education, we note many of the age trends outlined earlier (24):

Reasons	MEN				WOMEN			
	Under 30	30-39	40-49	50 and over	Under 30	30-39	40-49	50 and over
Prepare for new job	40%	39%	29%	33%	41%	27%	24%	17%
Help on incumbent job	40	50	48	37	19	20	25	18
Become better informed	35	40	27	57	31	41	41	47
Spare time enjoyment	10	16	19	28	24	30	24	29
Home-centered tasks	7	15	6	2	13	24	21	16
Other everyday tasks	10	16	7	3	9	9	8	22
Meet new people	11	16	12	19	23	20	15	22
Escape the daily routine	6	8	4	8	13	16	15	16
None of these, or don't know	7	4	6	6	4	5	9	4
Total	174*	204*	158*	193*	177*	192*	182*	191*
Base	1010	578	320	144	842	548	420	223
No information	98	70	34	28	125	24	36	58
Total (weighted)	1108	648	354	172	967	572	466	281

* Does not total to 100 per cent because some persons gave more than one reason.

Table 1. Reasons for participation in adult education by sex and age.

- Participants tend to be more highly educated than the national mean - The evidence is difficult to compare internationally, owing to different national structures. American participants have a mean of 12.2 years of formal education (the national average being 11.5 years), with ranges in participation in continuing education from 4% with no formal schooling to 47% with more than 16 years of previous education. The amount of prior formal schooling appears to be the most significant determinant of participation in all forms of continuing education.

- Participants tend to have white-collar or professional jobs and a higher income than the average - Taken together all three socio-economic variables - previous education, occupation and income - are powerful indicators of participation. In the American survey mentioned earlier, the university graduate in a white collar job who earned $ 7,000 (approximately 15% above the national average) was six times as likely to be enrolled in continuing education than a person who had left school at

age 15, held a blue-collar job and earned slightly less than an average income. There are indicators that, aside from frequency of participation, people from different socio-economic strata also use continuing education differently from middle class participants. As shown in the American survey, those of low socio-economic status (SES) prepare for their first job rather than to gain occupational advancement. The opposite held true for participants from higher SES. Both among men and women learning in relation to leisure time activities was more emphasised in higher socio-economic classes. Among women of low SES, adult education uses were heavily concentrated in both the vocational and home-making areas, whereas for women of high SES, presence of leisure time was a motive for enrolment more frequently than either job preparation, job advancement or home-making concerns. To be sure, most of these differences can be accounted for by economic factors (25).

Reasons	Socio-Economic Status					
	MEN			WOMEN		
	Low	Medium	High	Low	Medium	High
Prepare for new job	59%	39%	34%	41%	29%	20%
Help on incumbent job	44	43	50	13	18	24
Become better informed	25	38	45	39	39	40
Spare time enjoyment	6	12	18	16	32	31
Home-centered tasks	2	8	8	26	21	13
Other everyday tasks	8	12	8	18	12	7
Meet new people	9	11	13	23	16	21
Escape the daily routine	-	7	7	16	20	15
None of these, or don't know	4	8	3	7	2	7
Total	157*	178*	186*	199*	189*	178*
Base	212	375	650	207	427	628
No information	23	31	70	41	46	56
Total (weighted)	235	406	720	248	473	684

* Does not total to 100 per cent because some persons gave more than one reason.

Table 2. Reasons for participation in adult education by sex and socio-economic status (SES)

There are a number of other variables in participation, but they are more difficult to measure internationally. For example, participants are more likely to be urban residents, to have friends or associates among participants, to have more intellectually demanding leisure time activities. One interesting indicator is organisational membership. Participants are more likely to belong to community organisations, and more likely still to participate in continuing education when they hold executive positions in these organisations. The life-cycle data indicates that organisational memberships increase with age from 25 to 55, which are also peak years for continuing education.

A final variable has appeared in recent Anglo-Saxon research: the difference between participants and non-participants in attitudes towards new communications media and educational technology (communications satellites, computers and teaching machines). That participants are more favourable to new technology is taken to suggest a positive view of social and technical change.

We should isolate in the future with more precision the presence of cultural factors as they encourage or discourage continuing education. One promising approach is used in an American study which brought out the difference in rate of acceptance of new farm practices between Danish and Polish immigrants. Closer research showed that the Danish immigrants placed a higher value on education - as indicated by the level of education attained by their children - as well as on reading circles for adults, public forums and on participation in community organisations. The Polish cohort was more family-centered, more suspicious of persons from other cultural backgrounds and less concerned with the education of their children. The suggestion is that ethnocentrism is a general barrier to curiosity, achievement and other traits which we normally associate with educational behaviour.

The social factors are better known, and they involve the same causes that militate against the success in school of children from lower social classes: crowded home environments, lacking in books, periodicals, records, toys and other objects favouring cultural development; lack of verbal stimulation during childhood, severe discipline, which curbs certain forms of curiosity; few opportunities to develop mature cognitive behaviour; low span of attention and concentration; orientation to immediate, rather than deferred, goals. The intellectual capacities and social behaviour required for success at school are not developed sufficiently in pre-school children of poor and ill educated families. In addition, membership in a socially deprived or "negative reference" group leads inevitably to cultural exclusion in that it cuts off institutionalised avenues leading to success. It also creates the constellation of personality traits which are unfavourable to participation in continuing education: insecurity in classroom situations, fear of failure, fatalism, lack of motivation for social mobility through education, concrete (or literal-minded) rather than abstract (or detached and flexible) patterns of thought, alienation, withdrawal, and the sense of being exploited.

In psychological terms, we could simplify the matter by saying that people tend to resist any learning situation in which they anticipate failure or in which their mental image of the world is threatened. Here, we have in mind both the prior school experiences of these adults and the research on personality construction and "closed mindedness" or mental rigidity of the poor and uneducated. In particular, the work of Frenkel-Brunswik and Rokeach suggest that adults will be unwilling to change their attitudes or put themselves in unfamiliar settings when they have undergone the type of childhood often associated with cultural poverty. At the same time, we should not be surprised that such persons score low on "need for achievement" or on measures of "perceived ability to bring about community change". Sentiments of fatalism, victimisation or social impotence are usually fully justified in their situations. As Freire has revealed in his work with Brazilian illiterates, the motivations of the poor have been deeply repressed. Once brought to consciousness, they can be powerful incentives to learning - in particular, to learning about the reasons for their social condition.

In sum, we have a complex of psychological traits, social conditions and economic deprivation which would indicate that persons of low SES are obliged to spend their lives defending themselves rather than exploring themselves or their possibilities. In this connection, we should mention Maslow's theory of prepotent needs. Maslow postulates five fundamental human needs, arranged in a hierarchy in such a way that if one level of needs has been practically or entirely gratified, the other needs emerge as predominant. We can set out the hierarchy as follows:

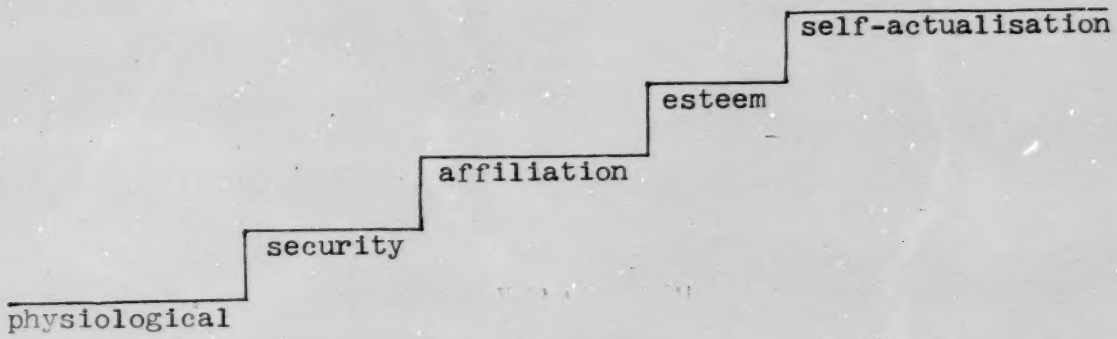


Fig. 17. Maslow's hierarchy of individual motivations

Physiological needs refer to food, clothing and shelter. Until they are satisfied to the degree necessary for sufficient operation of the body, a person's activity will be taken up predominantly at this level. Once physiological needs are gratified, the need for security or safety becomes dominant or prepotent. This involves the need to be free from physical danger or psychological obsession. It also assumes that there is no longer fear of being deprived of the basic physiological needs - as would be the case, for example, with loss of employment or extreme poverty. If these needs are

satisfied, affiliation or acceptance becomes prepotent in the need structure: the need to belong, to be accepted by others, to have meaningful relations with others. At the next level, need for esteem and recognition from others: feelings of self-confidence, usefulness, self-sufficiency, control over one's environment. At the height of the hierarchy is the need for self-actualisation. This is a widely discussed and often distorted term referring to the expression of one's inherent potential - in Maslow's words, "to become what one is capable of becoming" - often through acts of creativity, self-understanding and meaningful relations with others.

It would be logical, then, to expect that in highly industrialised countries we would find poor, ill-educated and blue collar workers justifiably preoccupied with needs for security, acceptance and self-esteem. At lower SES levels, adult education would be used primarily for finding jobs. Women of low SES status would be little motivated to seek out leisure time pursuits in intellectual, cultural or social areas which require, in most cases, economic and psychological security (as well as leisure time itself).

5. THE CONDITIONS OF LEARNING FOR ADULTS

5.1. Origins of instructional methods for adults

As the objectives of continuing education have changed throughout the years, so too have the instructional methods. The original objectives in most adult education programmes were religious and moral. If the poor were to lead useful, moral, happy lives, it was argued, they must be able to read the Bible. There was a corollary notion that increased literacy could also lead to a lowering of the crime rate, a reduction in pauperism and greater security for private and public property. The methods used were quite simple: biblical texts or prayers were read, interpreted and written out, usually with the aid of monitors assigned to groups of 5 - 10 adult students. Later, many of the classes were held in public schools after classroom hours. It was already recognised then, in the early 19th century, that special methods would be needed to motivate and instruct adults than those which were effective with children.

The second instructional model accompanied the industrial revolution. As machinery became more complicated or required basic literacy for repairs, there was a demand for a more intelligent class of operators. This called for a combination of training by demonstration - much the same as used with apprentices - with more conventional classes using drill and memorisation in such subjects as mathematics, reading and writing. Here, adults were frequently mixed with school-age children.

A third current, that of university-sponsored courses of "extension" programmes, took hold in Anglo-Saxon countries in the later 19th century and is only now becoming widespread in Latin Europe. The original model involved university lecturers in the prevalent arts and sciences of the period (political economy, literature, physics, astronomy, constitutional history) who toured the provinces on speaking tours in the major cities. Later, local discussion groups were set up around libraries or social clubs in order to prepare for and continue the lecture series. These groups turned into informal study centres and reading circles and, eventually, obtained accreditation to give examinations for school or even university certificates. In the United Kingdom and the USA notably, several of these local centres eventually retained visiting academics for longer periods of time and became universities in their own right.

The trade union movement provided the fourth instructional model. Education was seen essentially as a means of social and political emancipation of the worker through an understanding of law, economics and the organisation of syndicates. The original groups were "working men's associations" composed of reading circles which discussed economic, political and social literature and drew up legislation concerning wages and working conditions. In the later 19th and early 20th centuries, these

associations became institutes or colleges where a wider variety of courses was offered (grammar, drawing, political science, geography, history). Attendance shifted slowly from the working class to civil servants and clerks looking for professional advancement through further study. The origins of the public debate and group discussion as they are customarily found in adult education are to be found here.

With the exception of courses in artistic appreciation and creation whose origins are more hybrid, we can trace most existing programmes back to these prototypes.

Within each format, of course, instructional methods and techniques will differ. A literacy course has a different set of objectives from a forum on local government and will therefore call on different interactions between learner, teacher, instructional setting, subject matter and materials. Lecturing is primarily a vehicle for transmitting information or clarifying ideas, whereas small groups are useful in courses designed to solve problems or change attitudes. A clinic in first-aid training will utilise demonstration techniques more often than a workshop for parents and teachers, which would prefer role playing and intensive discussion. In general, content or skill oriented programmes, as in most vocational training, rely on formal and interpersonal methods and use instructional materials prepared in advance. On the other hand, an attitude oriented programme will involve more non-directive methods (group discussion, flexible materials, little evaluation or control, no fixed assignments). Another general proposition: if the objectives for the programme are clearly defined - if there is a clear description in behavioural terms of what the participant will be able to do, or do better, as a result of his participation - it should be relatively simple to determine the instructional methods most appropriate to achieve those objectives.

5.2. Reasons for the persistence of highly traditional practices

To date, adult education has not been an innovative area in pedagogy. Adults of different ages, capacities and backgrounds have been instructed as a homogeneous block or, still worse, taught by teachers of primary and secondary schools using inappropriate techniques: learning by rote and memorisation, lecturing without "feedback" from the audience, use of reading materials for school-age children, evaluation on the basis of verbal and written skills alone. Almost uniformly, researchers find that organisers of programmes in continuing education underrate the capacities of their clientele.

There are several reasons for this state of affairs. The heritage of the institution, particularly those of religious origin, weighs heavily on current practices. This leads to techniques of indoctrination on the one hand and, in vocational training, to the limited learning of skills required for the job. Secondly, the teaching staff has had little pedagogical

training for adult audiences. Also, in programmes sponsored by state or private organisations, the objectives come from without, independently of the composition or motivations of the learning public. Fourth, adult learners themselves - and we shall return to this point - often prefer traditional methods because these are more familiar or because they allow for greater passivity on the part of an anxious student who is unsure of whether he will be able to keep up. Finally, a great number of adult education programmes are remedial, that is, they permit adults to complete certificates at the primary school or secondary school levels. This generally amounts to the utilisation of precisely the methods, materials and examinations used in school-age instruction. It also penalises those who have failed in exactly the same circumstances earlier in their lives. Agencies for accreditation have done little to improve this situation by designing tests which will interpret and certify learning which has already taken place. Many adults have learned to learn independently or else have learned what is necessary in order to do a good job but are prevented from doing it because they lack formal credentials. Urgently needed are instruments which measure not where or how or over which period of time a person has learned, but rather what he has learned and how it can be usefully interpreted.

Theoretically, continuing education should be more innovative than the formal system, since adult institutions are marginal in terms of socialisation and status. It is a "fringe enterprise"; its participants are voluntary; and it is largely independent of the type of ministerial inspection used in monitoring teachers of children and youth. At the university level, in fact, the adult "extension" or "popular" programmes have been the first to introduce methods still novel in full-time instruction: independent study, applied research in the community, problem-centred curricula, group dynamics, student participation in the design of courses, use of non-academic personnel for instruction, and individual learning paths for various cognitive styles.

5.3. Potential of instructional technology: the autodidact

Many innovations in adult education involve the use of educational technology. In the case of working adults, we have a population which is geographically dispersed throughout the community. At the same time, it is worth remembering that all education basically depends on the interaction or communication process between teacher, learner and instructional materials. Educational technologists have taken these 2 factors as an indication that the teacher should go to the place most conveniently located for his students. Programmes and personnel, rather than students, are to be transported. In the British Open University, several metropolitan American university programmes and, to a lesser extent, the Canadian TEVEC and Polish Workers' University, we have examples of this process at work. Television, radio, telephony, programmed materials and computerised scheduling are

some of the vehicles which have been exploited in order to reach audiences in geographically dispersed or isolated areas, with mobile or migrant groups, at places of training or in situations where low-cost, rapid reproduction techniques (often linked with computers, libraries or microform methods) make it possible for students to dispose of individual learning materials.

Put simply, the orchestration of these media allows for instruction to larger groups of people in different locations. The second principle - well beyond the actual state of the art - is that the programme itself can be so designed as to enable individual students to attain a common point of competence by following different sequences through the learning materials: books, taped lectures, films and filmstrips, records and programmed texts.

But we are far from this point of refinement in current practice. The device in use most nearly approximating a technology of adult learning is correspondence study, which has a number of advantages. It is useful to a mobile population unable to commit a large block of time to study in any particular place. It allows for individual differences in rates of progress. Students get individual attention from tutors. The materials are carefully developed and relatively inexpensive. The format itself provokes less anxiety for the student insecure in public learning situations. Also, these materials are now being distributed in programmed form - ie providing immediate knowledge of results, self-pacing, progressing from simple to more difficult tasks - which requires no correspondence between learner and instructor.

There is increasing evidence that technical aids of this sort, together with increased leisure time and commercial interest in the adult "market", are increasing the numbers of adult learners. Of the 25 million Americans in continuing education in 1962, some 9 million were learning on their own. Some 60% of foreign language courses were followed on records, without formal instruction. 49% of those in speed reading courses used home-study techniques. Correspondence study accounted for 8% of the total public or some 1,750,000 people. One significant - and unfortunate - finding in studies of autodidacts or self-learners is that they consistently underrate the value of their efforts, since there is no control nor approval from a certified institution.

A surprising fact in American research is that a very small percentage (only 2% of the American public) uses television as an educational medium. Subsequent research will reveal if this phenomenon is limited to North America, where television has typically been a medium of light entertainment. Evidence from elsewhere gives more promising indications:

- that television instruction may whet the appetite in the community for more education and, as a result, lead many adults to full-time studies;

- that those following TV courses are older than the median age - primarily housewives who were unable to complete their education but who are strongly motivated;

- that there are large numbers of casual viewers or "eaves-droppers" following TV courses without being enrolled;

- that, in the United Kingdom, younger and less educated people are more attracted to the method of instruction by TV than to formal classes.

When used by itself, however, television is highly ineffective. Adults perform poorly or tend to drop out of telecourses which have no possibility for feedback or other kinds of 2-way contact. In addition, the clientele in such broadcasts is treated as a unified audience with common needs, interests and purposes, whereas adults are a highly diversified group and are most successful as learners when in interaction among themselves or with an instructor. Surveys of media use in developing countries and in Eastern Europe indicate that a motivated student learns less by himself from media broadcasting than in a well-operated study group at the point of reception. In the British Open University, the solution is that of integrating mass media with small group meetings, of combining live presentations with recorded materials, and of alternating models (from visual to auditory or the reverse or both). As a general rule, a variety of media has a greater effect than a single method. The learner uses a greater number of sensory channels and, as a result, retains or internalises his learning to a greater extent. In this connection, a Council of Europe report (26) presents a useful chart suggesting the best combination of media and modes of presentation for meeting various learning objectives:

Table 3: Instructional media and types of learning

Major classes of media by mode of information representation	Major Types of Learning						
	Learning of factual information	Learning of visual identification	Learning of principles, concepts, rules	Learning of procedures	Learning of verbal skills	Learning of skilled perceptual motor skills	Learning of desirable attitudes, opinions, motivations, value orientations
Audio-motion-visual media (television, picturephone, sound-film, video-tape etc)	Medium	High	High	High	High	Medium	Medium
Audio-still-visual media (still picture-television, sound filmstrip, sound-slide-set etc)	Medium	High	Medium	Medium	High	Low	Low
Audio-still-semi-visual media (telewriting, recorded telewriting)	Medium	Medium	Medium	Medium	Medium	Low	Medium
Still-visual media (facsimile, printed page, filmstrip, picture set, etc)	Medium	High	Medium	Medium	Low	Low	Low
Audio media (telephone, radio, audio disc, audio-tape)	Medium	Low	Low	Medium	Low	Low	Low

5.4. Identifying cognitive styles

We have already discussed the developmental factors which separate the adult learning group from an audience of school-age youth. In a pedagogical context, we can expect these differences to appear in the following ways:

- Adults are more responsible and mature in the sense of being self-directed learners with specific objectives, deliberate long-term goals and, usually, with schedules which make their participation a function of sacrifices in time, effort and funds.

- Adults are voluntary participants.

- Adults are far more complex as individuals and more heterogeneous as a group.

- By comparison with the child for whom learning involves identifying new phenomena and new relationships, the adult has a more complicated set of expectations and a good deal of experience against which to weigh incoming information.

- Adults are interested predominantly in the short-term application of what they have learned.

- Adults are less concerned with competitive evaluation as a group and more concerned with the success of a given programme in meeting their own pre-determined objectives.

These organising principles lead, in turn, to a number of pedagogical hypotheses (27):

- Adults achieve their best results when they are made responsible for their own instruction, through the use of group dynamics or other non-directive methods.

- Instruction should be based on day-to-day or significant experiences, in close relation to the specific social setting in which the student lives or works.

- Programmes should be directed towards the achievement of objectives which the learner feels to be personally meaningful, or which he has helped to elaborate.

- Success is more probable if instruction begins at the level of competence of the learner before proceeding to more abstract materials.

At first glance, these propositions may seem self-evident, but they are seldom put into practice. The best known French experience, the retraining of miners in the Lorraine by the CUCES, found its way empirically to all 4 principles after a number of false starts. The literacy projects supervised by Freire appear to follow these lines of conduct, as do the near entirety of adult programmes using non-manipulative forms of group dynamics.

The situation, however, is not quite so simple. A very important and recent field of research in continuing education is one which looks into the relationship between personality characteristics and teaching methods. The teaching method most suitable for one adult is not the same as for another. Some individuals need more direction in their work; others need less. Adults found to be high in anxiety and low in self-confidence or "dominance" achieve better results with traditional methods. Those high in affiliation perform best in group discussions. Students with high "need for achievement" - in which category we would expect to find the majority of adults in continuing education - do, in effect, prefer courses with no examinations, few lectures and no fixed assignments. The most able students appear to perform best in group work; the least able make greater gains in traditional formats of lecture, assigned readings and teacher-directed classroom instruction. To complicate matters, the student with a high need for affiliation seems to perform better with a teacher who emphasises warmth and friendship; while students with high need for achievement do not. We need far more precise clinical portraits of both our learners and teachers, particularly in adult audiences where fear of failure tends to be great and the breaking of former learning habits is hard to bring about without chasing away the student.

6. ADULT CHANGE AND LEARNING ENVIRONMENTS

6.1. The adult as a learner

It is a banality to say that adults are learning during their entire lifetime whether or not that learning is carried on in structured situations as, for instance, in classrooms, by television or with self-instructional materials. Most learning, to be sure, is incidental; it goes on without a prearranged organisation of the environment. The whole premise behind learning in more structured settings is that one will learn faster and more efficiently than if that instruction were left to chance.

Most learning has to do with relating oneself to one's environment. We generally learn things for 2 related reasons: (1) to better understand ourselves and/or our environment, and (2) in order to change ourselves and/or our environment. For example, we saw earlier that participants measuring high on "need for achievement" had strong incentives to change their environments, and that the people participating in reading circles or group dynamics sessions were motivated to better understand their culture and their own attitudes.

As a corollary, we find that most adults enrolled in courses or using self-instructional materials are in a situation of change. They take vocational courses because they have new jobs or are about to change the type of work they do in their present jobs. They often come to social or cultural programmes after the birth of a child, upon marriage or divorce, after moving to a new community or when confronted with a problem which is changing their lives and which they want to understand better (problems in their relationship with their children, coping with retirement, problems in communicating with co-workers etc).

As personal and social changes are less frequent and more gradual in the life of an adult than during childhood or adolescence, these are very important moments. Adults tend to avoid changes more than children and, often, to be more strongly affected by them. As a result, when adults enrol in a vocational programme or take a course in child development, they are both expecting a great deal and fearing a great deal. They are expecting that the learning environment (the teacher, the materials, the other students) will help them significantly in a way in which they are unable to help themselves alone. Their fears come from the following factors:

- They may be in a situation of transition and feel insecure about the outcome.
- They will be exposing what they can and cannot do, as well as who they are, in front of people whom they probably do not know very well.

- They have been cut off from structured learning settings for some time and may feel uncomfortable in them.

- They are used to controlling their environment - limiting the number and type of unexpected things that can happen to them - and often feel vulnerable in unpredictable situations.

Here lies one explanation for the fact that adults seem to prefer highly traditional, academic settings: programmed textbooks, structured lessons in class, recitations from prepared materials and limited participation in class. On the one hand, these settings allow adults to fall back on the type of learning they were used to and - for the majority - could master at an earlier stage of their lives. On the other hand, they do not have to expose themselves in front of others except on very predictable occasions which they can prepare for.

Thus we have the following paradox: at moments when they are most susceptible to outside influence, to changes in themselves and in their lives, adults tend to want to "domesticate" the learning settings in which these changes are being talked about or carried out. They try to slow down the process, reduce the uncertainties and salvage the continuity in their images of who they are and how they are able to cope in unfamiliar situations. In clinical or experimental terms, we talk of the adult's tendency to "premature closure", his investment in a "stable self-image", his inability to "change sets" rapidly or his reluctance to admit "cognitive dissonance".

More simply, an adult has a stronger - and longer - investment in his image of himself than does a young child; he has built up a number of habits and expectations which he is unwilling to put into question on short notice. As he is taking on a new job or moving into a new neighbourhood, he tries to reduce to a minimum the unknown or unpredictable elements surrounding the transition. Children are comparatively less constrained, rigid or conservative in unfamiliar and novel situations.

An adult in a situation of change, who puts himself or is put in an environment which he cannot entirely control, can evolve dramatically. This can happen in an "incidental" situation, such as a personal crisis. It can also be brought about deliberately in particular learning environments where the adult invests a good deal of emotional energy, as in psychotherapy, group dynamics, cultural literacy programmes of the type organised by Paolo Freire or achievement motivation courses along the lines set out by David McClelland. We shall return later in this chapter to some of these incidental and deliberate settings for adult change.

6.2. Critical events and the potential for change

Although adults change attitudes and behaviours more slowly and less willingly than children, such changes are in fact possible under the influence of a powerful environment. As a general rule, although almost any behavioural characteristic may be changed, the amount of change possible is a declining function as the characteristic becomes stabilised in a person's life history. Also, not only does a person become more resistant to change as the characteristic is stabilised, but such changes must be made at a greater emotional cost to the individual (28).

In short, it is easier to bring about a particular kind of development early in the history of an individual than it is later in his life. There is an increasing level of determinism in a person's characteristics with increasing age (29). The early years constitute the phase of most rapid growth of many emotional and mental characteristics. In later years, not only is this growth slowed or, in many cases, stopped altogether, but change is more difficult in that new developments in a person's life come to be determined by earlier developments. Also, it is easier to learn something for the first time - as is the case with children and adolescents - than it is to stamp out a number of learned behaviours and replace them by a new set, as is the case with adults.

This is not to deny that adults can and do change and grow in terms of their attitudes or acts. The notion that mental and emotional growth levelled off and ended at the same point as physical growth has been rectified. What longitudinal studies do show is that early traits are decisive for later development - that the IQ or emotionality of a 5-year old is fairly predictive of his IQ and emotionality at 35 - but that environmental influences can bring about significant changes. Bloom resumes this point well:

> "Stable characteristics are likely to be those that have an underlying structure or that are based on underlying patterns of personality, habits and motivation. Thus general intelligence or general academic achievement must be manifestations of fundamental properties of the central nervous system as well as of an underlying pattern of basic habits, attitudes and ways of relating to the world. Such characteristics are unlikely to be altered greatly unless the underlying structure or pattern is also changed." (30)

These influences often take the form of critical life events, for which adults have not been able to prepare themselves and which require sudden shifts of values, attitudes or behaviours. Such critical incidents usually have to do with the 3 main events in the life of an adult - taking a job,

getting married and becoming a parent - and they have been catalogued in a number of ways. One of the most suggestive ways of determining the importance of any change is by measuring the amount of anxiety which it brings to an adult. The amount of anxiety, in turn, is measured by (1) asking the adult to rate on a scale the amount of readjustment required by a number of changes in his life and (2) by the illness rate of the adult. The more significant the change, the greater the amount of emotional stress; the greater the stress, the more frequent and/or serious is the illness.

Below is the list of most significant life events which came out of the above measurements . They are in order of rank and value, the latter being calculated in terms of "stress values" or "life change units":

Table 4: Social readjustment rating scale (31)

Rank	Life event	Mean value
1	Death of spouse	100
2	Divorce	73
3	Marital separation	65
4	Jail term	63
5	Death of close family member	63
6	Personal injury or illness	53
7	Marriage	50
8	Fired at work	47
9	Marital reconciliation	45
10	Retirement	45
11	Change in health of family member	44
12	Pregnancy	40
13	Sex difficulties	39
14	Gain of new family member	39
15	Business readjustment	39
16	Change in financial state	38
17	Death of close friend	37
18	Change to different line of work	36
19	Change in number of arguments with spouse	35
20	Mortgage over $10,000	31
21	Foreclosure of mortgage or loan	30
22	Change in responsibilities at work	29
23	Son or daughter leaving home	29
24	Trouble with in-laws	29
25	Outstanding personal achievement	28
26	Wife begins or stops work	26
27	Begin or end school	26
28	Change in living conditions	25
29	Revision of personal habits	24
30	Trouble with boss	23
31	Change in work hours or conditions	20
32	Change in residence	20
33	Change in schools	20
34	Change in recreation	19

Table 4 (Continued)

Rank	Life event	Mean value
35	Change in church activities	19
36	Change in social activities	18
37	Mortgage or loan less than $10,000	17
38	Change in sleeping habits	16
39	Change in number of family get-togethers	15
40	Change in eating habits	15
41	Vacation	13
42	Christmas	12
43	Minor violations of the law	11

Intercultural correlations are fairly high; that is to say, adults in various parts of the world tend to agree on what are the most important or most disruptive events in one's life. Western Europeans correlate .884 with rankings by Americans and .844 with Japanese rankings.

6.3. Learning environments which accelerate change

Education, to be sure, involves changes in values, attitudes and behaviours. Learning to adjust to retirement or to taking on a new job in a large organisation are examples of learning or "secondary socialisation" which involve new skills, new goals and new ways of looking at oneself and relating to others. However, as we have seen, most organised forms of adult education tend to bring about few changes other than those involving skills. This is because values and attitudes are deeply ingrained and changes in these areas are very gradual and difficult to measure accurately. Also change is more difficult to bring about in adult years than in youth.

It is worth mentioning as well that adults have more and better defences against anyone who tries to change them. In particular, compared to school-age children, they have more rights. They can drop out or refuse to participate; for the most part, their education is voluntary. Nor can their teachers use threats or punishments to bring about learning - or, at least, conformity - as can be done with minors in the course of obligatory schooling. As a result, the environments with the greatest power for bringing about changes are those which can force deviant, unwilling or helpless adults to remain in them and submit to treatment. These are the so-called "total institutions": prisons, hospitals, asylums, monasteries or military camps.

Small towns, large companies and universities can also have a measurable and durable impact on people, although that impact is more cumulative than rapid. The more highly motivated the learner, of course, the more rapid the change is likely to be. The greatest amount of change in attitudes and behaviours seems

to come at the beginning. When youths or adults leave one environment and enter another, they seem to be especially susceptible at the very outset to the effects of the new environment. This is due to the fact that a person will accept more fully a new environment and its demands on him when he is new to it and does not yet have a set of developed defences against these demands (32).

By studying the behaviour of adults in periods of transition, during a crisis or under the influence of a powerful environment, educators and psychologists have come to understand how adult change can be triggered and sustained. The most obvious examples are psychotherapy and group dynamics. These are educative acts involving a number of learnings about one's own attitudes and behaviour, and they are so structured as to bring about an accelerated change in those attitudes and behaviours without having to institutionalise the learner. Two lesser known examples, inspired by very different psychological and social theories, are the cultural literacy programmes carried out by P Freire and training in achievement motivation given by D McClelland and his associates.

6.4. D McClelland: Training for achievement in adults

McClelland and his colleagues have carried out training programmes in a number of countries, including India, Mexico, Japan and Italy. The students are entrepreneurs or business executives in mid-career. They follow the course in order to increase or channel more effectively their motivation towards work and, eventually, to become more innovative, produce more, earn more money etc. The trainers' objective is to show how techniques of behavioural conditioning can change significantly and rapidly a person's view of himself as well as his performance at work.

The programmes are designed in keeping with many of the principles of conditioning: tight organisation and sequencing of the course in advance; attempts to "shape" a number of attitudes and behaviours by rewarding the correct responses and ignoring the incorrect ones; and constant information or "feedback" to the learner as a means of monitoring his progress. The basic assumption is that the results cannot be attained independently or spontaneously by the learner, no matter how high his motivation, but that the environment around him must be so structured or "engineered" as to bring about those results.

The project which has been described in greatest detail - owing, perhaps, to its proven success - is the series of training courses organised by McClelland and Winter in India for owners and employers of small businesses (33). Each course had 4 noteworthy characteristics:

1. It was short (1 to 3 weeks).

2. It was designed for groups rather than for individuals, as in person-to-person counselling.

3. It was residential, ie the participants were taken out of their customary environments and placed in a resort hotel.

4. It was voluntary.

The selling point used by the organisers was that high need for achievement (see section 4.2.) is related to effective entrepreneurship. Therefore, businessmen could expect to profit from taking a course designed to help them understand and develop the greater achievement motivation. We might recall that persons scoring high on need for achievement had the following traits in common: need to overcome obstacles, need to attain a high standard of excellence, need to rival or surpass others, prolonged effort to accomplish difficult tasks even without an extrinsic reward.

The course was administered in the following sequence:

1. Participants were shown, on the basis of historical examples and from case histories of successful businessmen, how high need for achievement is related to success in business. The objective here was to use successful or prestigious models in order to convince the learner that people whom he respects have the same goals as he and, moreover, were able to overcome a number of obstacles which are similar to his. Another objective was to start the learner thinking about achievement and the components of a personality which has a high motivation to achieve.

2. Participants were then taught to code stories written by others, using the need for achievement coding system. The code emphasises details in which someone reaches a high level of performance, overcomes a number of obstacles, sets ambitious goals for himself with realistic means for attaining them, or otherwise shows initiative, energy and independence. Participants then scored their own stories, written earlier in the course. They were told that if they found their own scores to be too low, they could now use the code to write stories saturated with need for achievement. This, in fact, was one of the basic purposes of the course: to develop an "associative network" or, in other words, to teach the adult to think constantly in terms of need for achievement. The actual writing and coding of these stories served to crystallise the motive in the mind of the learner.

The premise here is that the more clearly a learner conceptualises a new motive, particularly in an atmosphere which rewards that motive, the more likely he is to develop the motive himself. This, of course, is the premise behind most interventions in psychotherapy. Thoughts about new motives are seen as symbolic acts, and the practice of symbolic acts is a means to facilitate performing the real acts at a later date.

3. At this point, the participants were encouraged to connect thought to action by means of a number of "games" or simulations. Research has shown that persons high in need for achievement tend to act in certain ways. For example, McClelland's studies show that they prefer work situations where there is a challenge (moderate risk), some concrete feedback on how well they are doing and the opportunity to take personal responsibility for achieving the work goals. The participants in the course played a business game in which these characteristics were shown and, more important, were developed through practice. The game involved ordering parts to make a model bridge after having estimated how many bridges could be constructed in the time allotted. Each team showed a profit or loss at the end, depending on its performance.

The intention here was to enlarge the "associative network" (thinking about achievement and about oneself as an achiever). In principle, the learner now evaluated what he was doing in a work situation in terms of achievement. And when he thought about achievement, he now thought of it in terms of specific acts rather than as a theoretical construct.

4. In order to bring the course still nearer to the everyday experiences of businessmen, the participants then studied in detail a number of cases: the development of the careers or firms of business leaders and entrepreneurs. They then compared these case studies with examples of their own behaviour as managers. At the same time, they used various self-confrontation techniques, such as a semantic differential test, silent group meditation or individual counselling. The aim was to examine themselves more closely, to ask, "am I, in fact, an achievement-minded person and do I really want to become one?". In one session, McClelland comments, a participant decided he was not an achievement-minded person and did not want to become one. He subsequently retired and became a chicken farmer, much to the relief of the business in which he had been reportedly an ineffective manager.

5. The course ended with each participant writing a text in which he outlined his goals for the following 2 years. If he had assimilated the course, this document would show a willingness to take on new projects of an entrepreneurial sort involving moderate risks. The text obliged the learner to formulate for himself the practical implications of the course before he had finished it. It also provided a basis for evaluating the progress of the participants over the following months in meeting their own goals. They were told that for the next 2 years they were to consider themselves as still in training. They were sent "reminders" every 6 months of their own goals and told how far they had progressed towards meeting them. Here, the principle of "pacing" or "concrete feedback" was used to give the individual continual cues on the behaviours expected of him even after he had left formal training and was back in everyday business life.

Before looking at evaluations of this course, it is important to mention a few of the observations made by McClelland and Winter:

- Specificity of the training. The authors stress that not all high achievement is caused by high need for achievement. There is little evidence that high need for achievement is essential for success as a research scientist, professional, accountant or personnel manager. Rather, the achievement motive described here is related more narrowly to entrepreneurial, sales or promotional success.

- Importance of a secure and relaxed environment. The Indian businessmen were removed from everyday routine and placed in a relaxed atmosphere where they were encouraged in their efforts and given the opportunity for personal counselling on request. A good deal of research evidence does show that anxiety interferes with learning and that teachers or therapists who are more encouraging and more empathetic are more successful with their pupils or clients. The isolated resort hotel ensures that there will be few distractions from without, and that participants can concentrate fully on the objectives of the course, even between training sessions.

- Importance of the group. By going through the training in isolation from everyday life, participants came to see one another as a distinct "reference" group which had shared a number of experiences, had a new language and coding system, and which had common goals for organising their lives in the future. Arrangements were made to recruit participants from the same community so that they could form a "cell" when they finished formal training. The principle here is that changes in motives are more likely to occur and persist if the new motive is a sign of membership in a new reference group.

- The possibility of changing cultural stereotypes. Dominant fathers or authoritative bosses - as is the case in India - tend to discourage need for achievement in their children or employees. In addition, many of the cultural and religious writings in India (for example, the Bhagavad Gita) seem to oppose achievement striving or entrepreneurial behaviour. In many cases, then, training businessmen for achievement motivation would bring them inevitably into conflict with their elders or superiors. But the course indicated that, by means of psycho-dynamic techniques (notably role-playing) or simply by open discussion of one's own cultural values and prejudices, the participants were able to come to terms successfully with this problem and to take on the responsibility for these conflicts after the course.

The evaluation of these 2-week courses showed that about two-thirds of the participants were significantly and - more surprising given the short length of training - durably affected. In relation to comparable businessmen not taking the course and

in comparison with their own behaviour before training, the participants made significant gains in the following areas:

- number of risk-taking behaviours on the job;
- number of innovations (work improvements initiated);
- number of attempts to start new business ventures;
- effective use of time and money in work-related projects;
- entrepreneurial success (promotions, salary increases, profits, productivity).

More particularly, most of the participants had come to the course with high ambitions, but with neither the understanding nor the confidence to act and think in ways which would realise their ambitions. The training gave them the tools for attaining success in business. For those whose initial goals were low, the course seemed to have little effect.

6.5. P Freire: Discussion groups and literacy in Brazil

The context of the cultural literacy programmes designed by Freire is radically different from McClelland's work. The principal objective was to teach illiterate peasants in Brazil and later in Chile, to read and write as a result of their having come to grips with the social and political setting in which they lived. Put schematically, once the peasant came to see how the economy actually functioned, he would be motivated to read and write in order to better understand and eventually to put an end to a situation in which he was the principal victim.

At first glance, one can oppose the model of instrumental conditioning explicit in McClelland's course for Indian businessmen with a model of Gestalt or "insight" learning implicit in Freire's work. Between the partisans of these 2 models is a long and unresolved debate about how learning takes place - a debate about intrinsic vs. extrinsic motivation, innate vs. conditioned behaviour and Skinnerian vs. Maslowian interpretations of experimental data.

In this connection, the group discussions among Brazilian peasants and their teachers seemed to set off a sort of cognitive earthquake, along the lines of a religious revelation. The discussions apparently triggered a latent and powerful motivation to understand and change one's own life. Literacy simply became one of the means to that end. Apparently there was no need to create, shape or reinforce the motives by carefully structuring the environment around the learner. Rather, the intention was to free an intrinsic motive which had long been suppressed.

In theory, this was sufficient for significant and durable learning to take place. In practice, McClelland and Freire used a number of the same techniques. In particular, there is evidence that the teachers in Brazil subtly "engineered" the environment in which the discussions and exercises were carried on in order to attain specific, pre-determined results. This becomes far more transparent when Freire's methodology is used elsewhere, notably in industrialised countries with a population of urban immigrants.

In the organisation of these programmes, Freire's objective is first to stimulate the peasant's awareness of his own social and economic situation. This work is carried out in group discussions or "Cultural Circles" (34)(*). The discussions are structured around 11 "existential settings", each represented at the outset by an illustration or a photograph. For example, the first picture shows a man surrounded by natural objects (several trees, a bird, the sun, the earth) and by what Freire calls "cultural objects" (a house, a well, some tools, some clothes). The discussion moves from questions such as, "who made the well and why?" to a debate on subsistence needs and the nature of work. In the first instance, the debate is intended to show how men transform nature to meet their needs. Later on, the same or similar elements act to bring the discussion to the ownership of the means of production (Who works for whom? Why do some work for others? Who owns the tools and the land? What is a peasant?)

In Freire's words, these discussions help the peasant to progress from a "magical" or "naive" awareness of social affairs to a more "critical consciousness". He describes these 3 stages of social and political awareness as follows:

- "Intransitive consciousness". The peasant lives an isolated mental life in a closed family unit. He is not concerned with matters which go beyond the daily necessities of his life. He has no historical sense, and tends to live wholly in the present. He has a superstitious or "magical" view of causal reality, ie he does not accept logical or rational explanations for what happens to his livestock, his village, his family or himself. He tends to be fatalistic about his own life and that of his family.

- "Naive transitive consciousness". The peasant tends to simplify problems and arguments (black-white, right-wrong). He feels that the past was superior to the present. He underestimates the work and the capabilities of peasants and workers in general. He argues by intuition, metaphor, emotionally and polemically, rather than by marshalling evidence to prove his point. He feels that others are responsible for what happens to him.

(*) The following section is adapted from Terre Entière, No. 34, mars-avril, 1969.

- "Critical transitivity". The peasant is able to understand and interpret objective evidence. He explains events by rational causes rather than by magical or intuitive explanations. He can deal with strangers and abstract evidence, elaborate a coherent ideology, be open to technical and cultural innovations and take responsibility for his actions.

This type of evolution is frequently described in anthropological literature (the "primitive" and "modern" mentalities) and in developmental psychology (Piaget's "concrete" and "formal" stages of mental development). Seldom, however, is a non-manipulative effort made to provoke such an evolution. Freire insists that the progression from one stage to another is not forced on the peasant nor tightly programmed into an instructional sequence. Rather, simply by exercising basic skills of reasoning and by touching on the real concerns of peasants, these discussions appear to bring illiterate adults to a fairly sophisticated understanding of their occupational and social roles, of the mechanisms behind their poverty and political impotence, and of the means to gain greater political power. On another level, Freire's work recalls the more narrowly cognitive training programmes of Schirks and Laroche in France. These courses, mentioned earlier, are designed along Piagetian lines to bring adults from a "concrete" or pre-logical stage of mental operations to the "formal" or logical stage reached by most adults in industrialised countries at age 14 - 15.

The eleventh and final "existential setting" deals with the question of culture (Who creates and diffuses culture? What is taught in school and by whom? Who reads and writes? Who is illiterate and why?). The discussions lead directly to the problem of how one democratises culture and, from there, to literacy. The participants come to see that their powers of information, communication and intervention are limited by their inability to read and write.

The method used to teach literacy is a highly original mixture of structural (phonetic) and thematic ("centres of interest") techniques. Here again, Freire insists on the activity of the learner and, in particular, on the peasant's capacity to learn his own language by recreating it. The premise is that highly structural or grammatical techniques are too far removed from the peasant's concern for learning to read or write, but that simply cataloguing and copying key words is also insufficient. There is also a more general assumption that drawing on the learner's intrinsic motivation to understand and act on his environment is more effective than any method in particular.

The corollary, which sets Freire apart from most literacy programmes for adults, is that literacy should not, in the first instance, be a means of increasing a peasant's productivity or earning capacity, but rather a vehicle for understanding his life and communicating with others. The majority of programmes are focused on "functional" skills in reading and writing related

directly to work or family hygiene. Freire points out that the functionalist conception tends to treat adults as objects, as human capital to attain social or economic results which usually profit others more than the peasant or the worker.

Literacy training is carried out by means of 40 or 50 "generative words". These are words to which the peasant relates immediately and which, when divided into syllables, can be recomposed to create a number of new words. For example, one of the generative words is "favela" (slum). First, a photograph or film of a slum is examined, and the "existential setting" is discussed: how one lives, eats and works in slums; health, clothing and education in slums; who lives in slums, etc. At the end of the discussion, the word is taken apart into 3 syllables (fa-ve-la) and divided into different phonetic groups:

fa-fe-fi-fo-fu

va-ve-vi-vo-vu

la-le-li-lo-lu

The peasants then begin to "discover", then to construct words by combining the syllables in various ways: fila (file), vela (candle), fivela (ring), etc. The words are spoken, decoded and then written out. In the succeeding sessions, new and gradually more difficult generative words are introduced.

As noted earlier, the generative words are chosen not only for their phonetic value but also for their appropriateness in a discussion of the living conditions of the participants. Below is a condensed list of these words and the points of discussion evoked by their use:

chuva (rain)	- the Brazilian climate; crops and irrigation; the subsistence economy in Brazil; regional differences in rainfall, fertility and economic wealth.
arado (plough)	- the importance of labour; tools and technological innovation; transformation of nature by man; labour and the accumulation of capital; agrarian reform.
comida (food)	- malnutrition; hunger in the region and throughout Brazil; infant mortality and sickness caused by malnutrition.
profissao (profession)	- organisation of labour; social classes and social mobility; trade unionism, strikes.
governa (government)	- political organisation and political power; the role of the peasant and worker in politics; populism.

In principle, the role of the teacher or "animator" is non-directive. He serves to get the discussions started, to introduce the generative words, to furnish the group leaders with appropriate materials. More specifically, the teacher has 4 functions:

1. He notes down the vocabulary used by the participants in their preliminary discussions. This allows him to explore the group's preoccupations, desires and experiences.

2. He then selects the generative words which best reflect the group's concerns and organises them in order of increasing difficulty.

3. He animates the discussions on the living or political conditions associated with these words, and provides group leaders with notecards containing the key words as well as with new topics for discussion.

4. He makes notecards with various phonetic combinations of the key words, and collects the accessory materials for presentation and discussion (illustrations, films, maps, etc).

The evaluation of these programmes has not been as systematic as McClelland's, but there is enough evidence to indicate that the majority of the peasants following the entire course learn to read and write within 6 weeks. The durability of the learning is less clear, but it appears to be fairly stable. Another indication that the programme has been effective is the rapid creation (within a year) of hundreds of rural trade unions in the regions in which the Cultural Circles were located. Other indices (registration for voting, creation of co-operatives, productivity, use of modern farm equipment, family hygiene, resistance against unfair legislation or taxation) were not looked at systematically.

Freire's literacy programmes seem to have been more successful in Brazil than in countries with different political regimes (Cuba, Tanzania) or in Western Europe. The apparent reason is that the political and economic conditions of the peasants made Freire's method more meaningful and certainly more explosive than literacy work of the same type in the context of a national campaign or in work with newly arrived immigrants in France or Switzerland. For example, Freire's disciples in northern Europe have found the generative words of Spanish and Turkish immigrants have principally to do with earning more money, buying goods and eventually owning a private company of their own. This does not invalidate the methodology, but does mean that the ideological orientation cannot be transported wholesale from one social context to another.

Nevertheless, the interesting point is that Freire was able to achieve startling results with the type of public which most adult educators describe as listless, unmotivated and fatalistic - the public which avoids or drops out of continuing education, but which presumably needs it the most. Here again, Freire's work intersects with some of the more recent research on school dropouts, illiterates and unemployed workers. Clinical studies of school dropouts, for example, now show that they are neither

lacking in native ability nor in their basic personal adjustment, but that they suffer from what is called "external locus of fate control" or, in other words, powerlessness. Feeling powerless to change an environment which they do not like but are unable to leave, these children protect themselves by retreating into a subjective world of fantasy. To observers, they appear apathetic, fatalistic or alienated. In particular, experimental data shows that individuals who feel themselves powerless in a given situation - notably prisoners and hospital patients - tend to know little about the specific conditions or causes of that situation. In other words, feeling helpless to influence their environments, people are not motivated to learn about them, and this in turn makes them appear to be uneducable. What Freire's work shows is that the process of raising the consciousness of adults - bringing them to understand their personal or social situation in such a way that they can visualise how to act concretely in order to improve that situation - is a powerful device for motivating all learners, particularly the most disinherited among adult learners.

7. EVALUATION OF RESULTS

We evaluate, in education and elsewhere, for 3 related reasons:

- to determine the value of a course, a teacher or some instructional materials; to judge the merits and demerits of an activity or a performance;

- to obtain evidence allowing us to make decisions about the allocation of time, funds or people, or to correct the decisions made previously in light of this new evidence;

- to measure whether and to what extent a programme, teacher or student is achieving the objectives or living up to the expectations set out before the course began.

In short, evaluation helps to collect information about what is happening at various moments in an activity and, if possible, to indicate how that activity could better be carried on in the future. Such evaluations come to students in the form of test results, teachers' comments or by the student's own observations. Programme evaluation, on the other hand, deals with the performance of the entire class, the effectiveness of the teaching, the use of time and materials and the influence of one activity on other activities in the same institution. In both cases, the objective is to sort out the changes taking place in individual students and in institutions which are due to the instruction being given and which would not have occurred if there had been no instruction.

The principal criterion in evaluating learning is the learner's performance and, in particular, the progress in that performance between his point of entry to the course and at the moment when he completes the course. There is, in fact, a fairly constant evaluation cycle for each learner or each group of learners. First, the objectives of the programme are specified, if possible in very precise terms. It is particularly important to know what the learner will be able to think, feel or do at the end of the course which he could not do at the beginning. Next, we should specify the activities or the experiences which the learner will be given in order to achieve the objectives. It is also useful to have information on the characteristics of the learner so that a choice can be made among the various activities or experiences leading to realising the objectives of the course. Then, evidence is collected by various means (paper and pencil tests, questionnaires, work samples, simulations or "critical incidents" etc) during and after the course in order to monitor the progress of the learner towards meeting the objectives. Finally, this evidence is used to re-examine the instructional

programme, including the teaching and materials, and to improve the facilities for the next group of learners. The cycle can be diagrammed as follows:

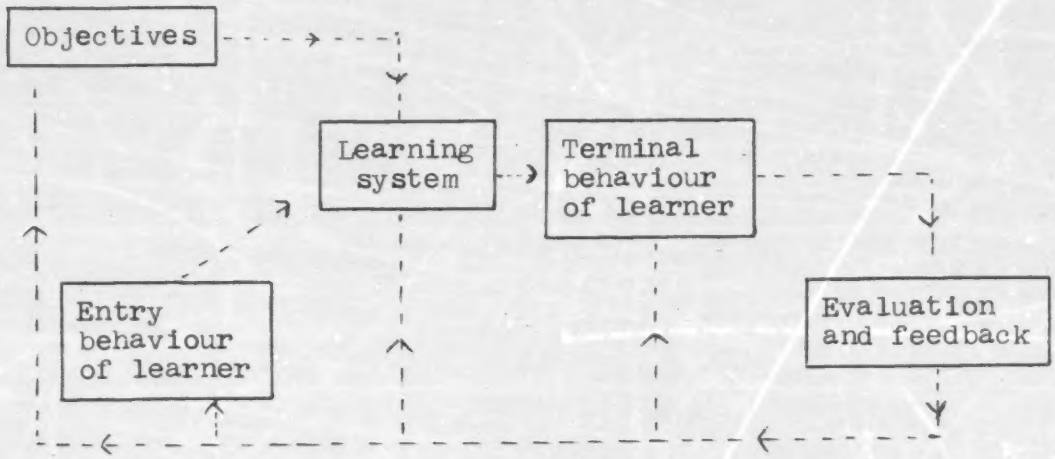


Fig. 18. Diagram of a learning cycle with an evaluation component

It is fairly simple to set out these parameters for evaluation, but it is very difficult to implement them. Evaluation is time-consuming and expensive, technically complex, potentially misleading and it often contaminates or disrupts the very activities it is meant to evaluate. We can say that an evaluation is necessary in order to find out the results of one's own or others' performances. However, we must also note that very little systematic evaluation actually goes on in education in general and even less in adult education.

Also, specifying objectives is a very long, arduous and controversial process. It makes several unproven or unacceptable assumptions:

a. that all the major outcomes can be known before a course begins;

b. that behaviours can be fragmented into narrow categories which separate cognitive from affective objectives;

c. that the objectives are generally specified for the learner and not by the learner himself; and

d. that specifying objectives automatically ensures better results.

In addition, few of the instruments used to assess the performances of learners or programmes have been designed specifically for the course in question, but rather adapted from elsewhere. And instruments which have been designed locally have usually not been validated, ie they may not test the performances actually called for in the objectives of the course, nor yield the same results with successive groups of students.

A more general and less behaviourally inspired approach to evaluating objectives has been elaborated by Bloom and his associates in their 2-volume Taxonomy of educational objectives. The taxonomy is intended to distinguish the level or complexity of the performance. For example, the objective, "the learner will be able to read more effectively", does not specify whether the course is intended to master the mechanics of reading, improve the reader's degree of reading comprehension, increase reading speed or change the choice of reading matter made by students. Bloom's work aids the evaluator to situate the objective within a hierarchy of educational goals, which begins with "knowledge of facts" and ends with "judgments of value".

The difficulty with this structure has been that it is not operational. Defining or categorising such cognitive objectives as "knowledge of facts", "analysis of relationships" or "synthesis" does not, in itself, make it any easier to evaluate whether these objectives have been attained by learners. Recently, however, Ausubel and Robinson have amended the taxonomy by breaking down each category into more descriptive terms and providing test items which could be used to measure the degree to which the learner attains the objective (35):

Table 5: Outline of Bloom's taxonomy of educational objectives in the cognitive domain

Category	General description of category	Illustrative items
I. Knowledge a. of specifics (terminology, facts) b. of ways and means of dealing with specifics (conventions, classifications, criteria, methodology) c. of universals and abstractions (principles, generalisations, theories)	Recall of specifics and universals, methods and processes, pattern, structure of setting. Knowledge objectives emphasise most the psychological processes of remembering.	About what proportion of the population of Canada is living in cities? 1. 10% 2. 20% 3. 40% 4. 50% 5. 60% (Knowledge of specific fact) The volume of a given mass of gas varies directly as the _____ and inversely as the _____. 1. pressure and temperature 2. temperature and pressure 3. atomic weight and pressure 4. temperature and atomic weight (Knowledge of principles and generalisations)
II. Comprehension a. Translation b. Interpretation c. Extrapolation	Lowest level of understanding of what is communicated. Can use idea being communicated without necessarily being able to relate it to other ideas or see all its implications.	Four less than three times a certain number equals eight. In algebra this may be expressed as: 1. $4 - 3X = 8$ 3. $3X - 4 = 8$ 2. $4X - 3 = 8$ 4. $4 + 3X = 8$ (Translation)

III. Application	The use of abstractions in particular and concrete situations.	Two basic laws governing an electrical circuit are: Voltage = (Current) x (Resistance) Power = (Voltage) x (Current) If an electric iron develops greater resistance (rust, etc.), its power will: 1. increase 2. remain the same 3. decrease
IV. Analysis a. of elements b. of relationships c. of organisational principles	Breakdown of a communication into its constituent parts, such that relative hierarchy of ideas is made clearer and/or the relations between the ideas expressed is made clear.	The given figure represents a hoop of 28 in. diameter. If the hoop is rolling without slipping in the indicated direction, how many inches has point A moved horizontally when the hoop has finished half a turn? (π= 22/7) (Analysis of relationships)
V. Synthesis a. Production of a unique communication b. Production of a plan c. Derivation of a set of abstract relations	Putting together of parts to form a whole; analysing and combining pieces in such a way as to constitute a pattern or structure not clearly there before.	Without adding all items, find the sum of: $\frac{1}{1x2} + \frac{1}{2x3} + \frac{1}{3x4} + \frac{1}{4x5} \cdots$ $\frac{1}{98x99} + \frac{1}{99x100}$
VI. Evaluation a. Judgements in terms of internal criteria b. Judgements in terms of external evidence	Making judgements about the value of material and methods for given purposes. Judging extent to which material and methods satisfy given criteria.	The ability to indicate logical fallacies in arguments. (Internal Evidence) Ability to compare a work with highest known standards in its field. (External Criteria)

Most of the problems mentioned apply more generally to evaluation at all levels of instruction. Some, however, are specific to adult education:

- Absence or limitation of evaluation. The situation differs for cultural programmes and vocational programmes. Most cultural programmes (courses in creative arts, reading circles, group dynamics) are fully voluntary and are often "purchased" by the learner, ie the enrolment fee pays for the course and the teacher. Institutions giving these courses look primarily at the number of enrolments and the number of dropouts. That is, they focus on the learner's satisfaction with the course, which may or may not mean that efficient learning has gone on or that the course has met its own or the learner's objectives. These objectives are kept deliberately vague, so that greater numbers with various goals will enrol, and this in turn makes any systematic evaluation nearly impossible. Alternatively, the very fact that someone offers a course on pottery, foreign languages or child-parent relations is seen often as a justification in itself, and evaluation is frequently waived. In other cases, the objectives are meant to be set by the participants themselves, but seldom is there any systematic evaluation beyond an intuitive judgement at the end of the course.

In vocational courses, evaluations are made more frequently, since employers or institutions regard these programmes as investments and want to be certain that these investments are profitable. Unfortunately, these evaluations tend to be narrow and, in many cases, to use criteria which were not taken into account in the course itself. For instance, a course designed to teach workers the use of automatic machinery may be evaluated by looking for a rise in overall productivity or a faster production time for a given product. While these outcomes or side-effects may be due to the training, these were not built into the instructional objectives.

There is also a disturbing tendency in vocational training to evaluate a worker's performance solely by asking the trainer or the supervisor, but not the worker himself. Here it is worth recalling that one of the main advantages of working with adults, as compared to children, is that they are capable of self-evaluation - they are able to provide a reasonably objective and accurate estimate of their own progress and performance. These subjective judgements can be checked against the results of validated tests and the judgements of experts or observers, but they should not be replaced wholly by external evaluation.

- Measurement problems. Learning is a complex process; it often occurs gradually and goes on long after formal instruction is completed. Many of these changes can be monitored in school children, since they remain for long periods of time each day in the classroom and usually stay in one school for several years. The adult public is far less stationary and accessible. Also, adults are more likely to take either short-intensive courses (where changes do not show up immediately and the public cannot easily be contacted afterwards) or a programme stretched out for a few hours per week over a number of years (in which case it is

difficult to sort out the learning due to the course from learning due to personal history or maturation).

In addition, it is hard to find or use control groups for adult education. Unless the adult public is institutionalised (in a school, large organisation, hospital etc) it is difficult to select comparable adults elsewhere who are not being given the same experimental treatment. Also, matching adults by any of the common criteria (age, social class, education, IQ) is far less satisfactory than matching children, who are likely to have more common characteristics up to age 12 - 15. This means that validating instruments or generalising results from one adult public to another is scientifically less reliable than would be the case with groups of children.

Finally, a number of programmes have objectives which are so personal as to make evaluation of results a very delicate operation. Programmes in group dynamics, parent-child relationships or reducing ethnic prejudice will involve interviews or observations to see whether the learner's behaviour has actually changed. Adults often treat such requests as invasion of privacy. The alternative, no more attractive, is to create experimental settings (for example, an evaluator who makes racially biased comments in the participant's office after a course on reducing prejudice) which amounts to tricking the learner in order to measure his behaviour.

The basic problem in evaluating educational problems is the tendency to measure results without being able to identify the factors accounting for those results. A classic experimental design may yield data showing that one reading scheme is superior to another, but we cannot tell from that data which ingredients of the scheme produced the main effects on the readers. Educational evaluation has not been evolutionary, ie it measures outcomes but does not provide information on how the outcomes were attained or can be improved in the future.

The difficulty arises from the heritage of educational research. Most evaluative designs are derived from experimental psychology, which was carried out under laboratory conditions with random assignments of subjects and manipulated treatments. These conditions are too far removed from day-to-day instruction in natural settings for the same procedures to be used. Experimental psychology also calls on "horse-race" designs: the selection of 2 or more subjects and the administration of an experimental treatment to one of those subjects. While such a design indicates whether the treatment was the likely cause of the difference in performance between the 2 subjects, it does not clarify the nature of the difference, nor does it reveal the interactions between the independent variables (eg teachers, materials, sequencing or setting of a course etc). Finally, this method of evaluation does not bring out the differences between individual members of a group of learners, since most such designs only measure inter-class variance without accounting for intra-class variances.

The point is that evaluation in education should not only measure outcomes but also aid in making decisions about improving learning. To do this, more evaluation should be made during the process of a course (formative evaluation), rather than only at the beginning and end (summative evaluation). Measurements can then be multiplied in the course of instruction to account for the nature and cause of changes in performance as they appear, much as in programmed instruction. An alternative solution, far more difficult to implement, is to design factorial experiments which involve the manipulation of all the composite factors: type of institution, course, objectives, instructional setting, methods of teaching, motivations of students and teachers, and the like.

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